

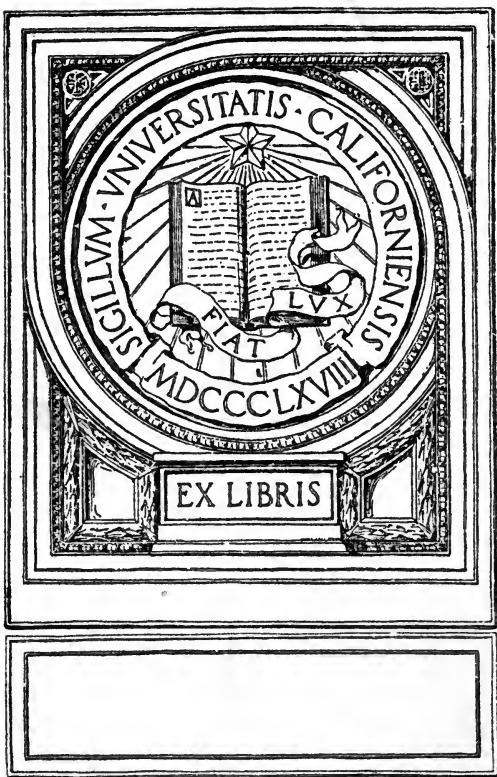
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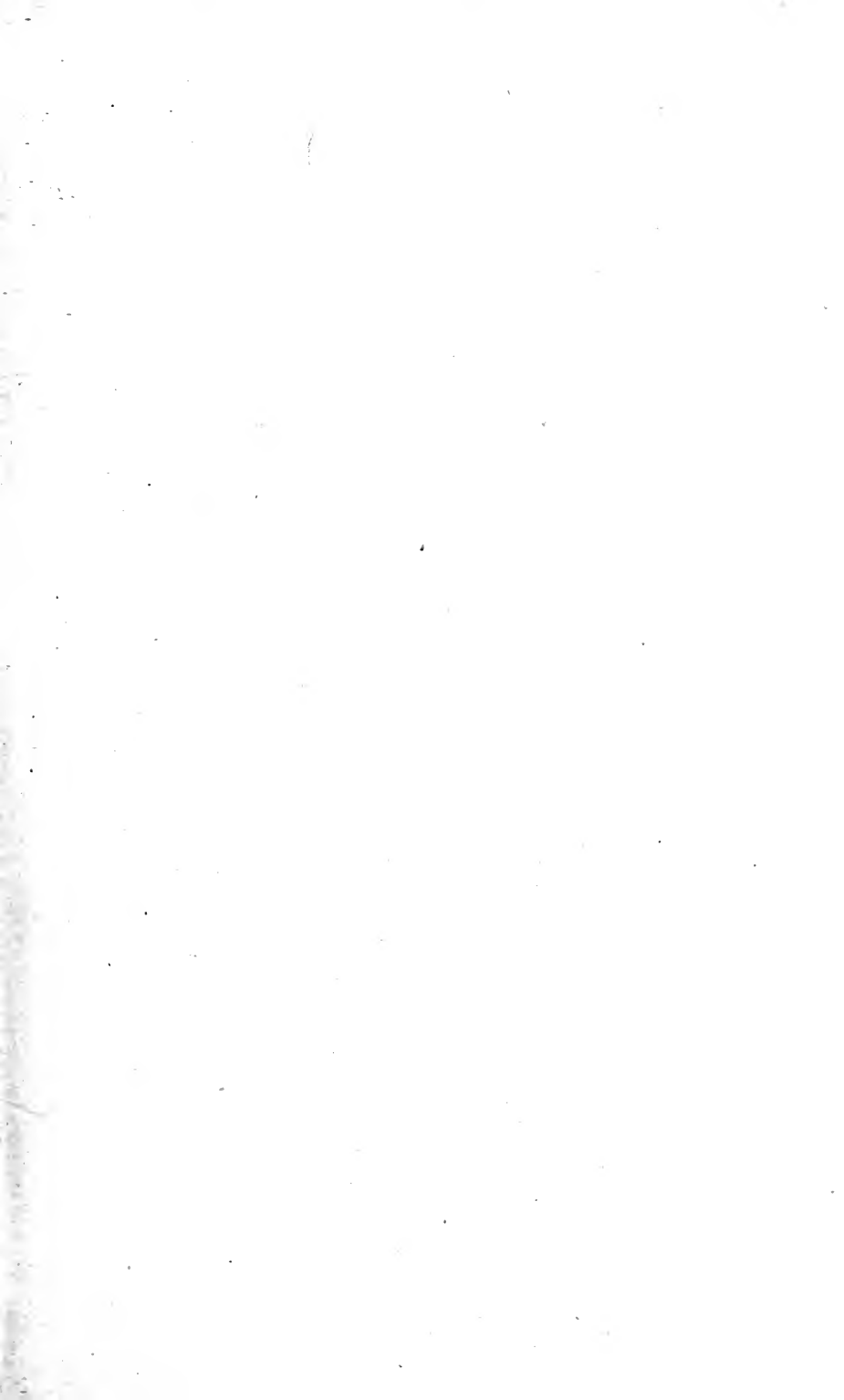


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# GOLD MINE ACCOUNTS AND COSTING

TAIT





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**GOLD MINE ACCOUNTS  
AND COSTING**





# GOLD MINE ACCOUNTS AND COSTING

A PRACTICAL MANUAL FOR  
OFFICIALS, ACCOUNTANTS,  
BOOK-KEEPERS, ETC.

BY

G. W. TAIT

<sup>11</sup>  
(OF THE SOUTH AFRICAN STAFF OF A LEADING  
GROUP OF MINES)



LONDON

SIR ISAAC PITMAN & SONS, LTD., 1 AMEN CORNER, E.C.

BATH AND NEW YORK

HF 5686  
.M6T3

PRINTED BY SIR ISAAC PITMAN  
& SONS, LTD., LONDON, BATH,  
AND NEW YORK

THE  
PITMAN  
PUBLISHING  
CO.

## PREFACE

THIS book is the outcome of many years' practical experience in account keeping in connection with the Rand Mines of South Africa. Although the method of accounting set out in the following pages is particularly applicable to the Gold Mines of South Africa, it will be found of considerable use to all who are interested in the keeping of the accounts of mines of all classes and in all parts of the world. The book is distinctly practical, and as such eminently suitable for the purpose for which it is intended.

These pages originally appeared as a series of articles in the *South African Mining Journal* (Johannesburg), and the appreciation expressed by the editor of that journal, by some of its distant readers, and by near friends in widely different grades of Rand Mining circles, has contributed largely to feed the writer's ambition to see his work in a more permanent form.



# CONTENTS

CHAP.	PAGE
I. DIVISION OF ACCOUNTS . . . . .	1
II. JOB NUMBERS, ETC. . . . .	3
III. MINE BOOKS, LIST OF . . . . .	6
IV. MINE OFFICE BOOKS, ETC. . . . .	7
V. WHITE TIMEKEEPER'S OFFICE BOOKS, ETC. . . . .	16
VI. NATIVE TIMEKEEPING . . . . .	29
VII. STOREKEEPER'S OFFICE BOOKS . . . . .	38
VIII. SUBSIDIARY ACCOUNTS . . . . .	44
IX. WORKING COSTS ACCOUNTS . . . . .	57
X. CAPITAL ACCOUNTS . . . . .	64
XI. GENERAL ACCOUNTS . . . . .	70
XII. DISTRIBUTION . . . . .	78
APPENDIX—SKELETON BALANCE SHEET WITH	
REFERENCES	<i>end of book</i>



# GOLD MINE ACCOUNTS

## CHAPTER I

### DIVISION OF ACCOUNTS

1. MINE accounts may be separated for working purposes under the following heads :

(a) *Subsidiary Accounts*, viz., electric power, electric lighting, water supply, stables, sanitation, supervision, surface tramways and railways, native compound, including hospital, workshop, survey, sampling, assay, steam power, air power, hoisting, drill sharpening, maintenance of rock drills, trammings and shovelling, precipitation, clean-up and smelting, return and make-up water service.

These accounts, which are explained in Chapter VIII, are kept separately in the Subsidiary Accounts Ledger (see par. 16), and only one account is kept in the main ledger (see par. 14), showing the debits and credits from all sources, as briefly as possible.

(b) *Working Cost Accounts*, viz., stoping, pumping and baling, crushing and sorting of ore, transport of ore, stamp milling, tube milling, cyaniding sands, cyaniding slimes, development redemption, general charges (which include general mine expenses, mine office expenses, maintenance of buildings, roads and surface maintenance, town office expenses, London and Paris office expenses).

These accounts, which are explained in Chapter IX, are kept in the Main Ledger. (See par. 14.) Details are kept in the Cost Book (see par. 23).

(c) *Capital Accounts*, viz., sinking, development, underground plant, surface plant, buildings (*i.e.*, shaft, surface, workshop, residential, ore reduction, compound, etc.), workshop plant and machinery, water service plant, electric power and lighting plant, railway-sidings, surface

tramways, live stock, etc., furniture, surveyors' and engineers' instruments, etc.

These are the accounts, which, as explained in Chapter X, are kept in the Main Ledger. Details are kept in the Construction Book, *vide* Chapter IV, par. 21. *et seq.*

(d) *General Accounts*, viz., stores, white wages, mine contractors, native wages, native labour supply, native clothing, native advances, purchasing agency, interest paid and received, investments, rent account, manager's cash, insurance companies, subsidiary accounts, sundry persons, key deposits, gold, gold in transit, rebate on gold freight, gold insurance, payments in advance on account of licences, taxes, etc., bank (dividend), bank (debenture interest), loans, etc.

These accounts are kept in the Main Ledger (see par. 14), and are explained in Chapter XI.

(e) *Sundry Accounts*, viz., other companies having only occasional transactions, surface contractors, stores supplier, mine employees, etc.

These accounts are kept separately in the Sundry Persons' Ledger (see par. 15), and only one account is kept in the Main Ledger showing the total debits and credits from all sources, as briefly as possible.



## CHAPTER II

### JOB NUMBERS, ETC.

2. *Job Numbers.*—THIS question is a very important one in mine accounts, as job numbers are the basis of all allocation and distribution of expenditure, helping to classify entries in time-sheets, stores requisitions, cash slips, journal vouchers, etc. The ulterior object of the allocation or distribution of expenditure is to debit each sub-head of the main accounts in as great detail as may be considered necessary or desirable, and this would be almost impossible without job numbers.

3. Sufficient care does not seem to be generally taken in arranging job numbers, so that their general trend may be easily memorised, but the following scheme would seem to meet this requirement on most large mines :

Job. Nos.	Names of Accounts.
1—199.	Subsidiary accounts.
200—299.	Transport and crushing and sorting of ore.
300—399.	Stamp milling.
400—499.	Tube milling.
500—599.	Cyaniding sands.
600—699.	Cyaniding slimes.
700—749.	General charges.
750—799.	Stoping ; pumping and baling.
800—899.	Development.
900—999.	Sinking.
1000—8999.	General construction works.
9000—9999.	Sundry accounts.

Chapters VIII to X show how these job numbers may be allotted.

4. *Prefixes to Job Numbers.*—Where costs are kept in great detail, and there is therefore a considerable number of jobs operated on, it is necessary to reduce the job numbers into as small a compass as possible, and for this purpose, as well as for assisting in memorising them, it is usual to

indicate each shaft by an initial, such as A, B, C, etc., and to prefix this initial to the job number. Thus, B751 would indicate "Machine stoping, excavations, B shaft."

5. *Suffixes to Job Numbers.*—Similarly, in the case of new construction works, it is desirable to use letters as suffixes to job numbers to indicate the different portions of, say, a building job, as follows :

- A Excavations for foundations.
- B Masonry for foundations.
- C Erection of building.
- D Painting.
- E Electric light fitting.
- F Water mains, etc.
- G Outhouses.
- H Fencing.

Thus B1100, representing a new engine-house at B shaft, B1100A would mean the excavations for its foundations. Similarly, 1251, representing a block of quarters, 1251E would mean the electric fittings for it.

6. *"Maintenance and Running."*—Expenses incurred on account of "maintenance" of buildings, machinery, etc., are for repairs, renewals, or replacements. These are not debited to the capital account relating to the particular building or machine, but are distributed through the various subsidiary accounts to working costs, etc. In some cases amounts which seem correctly describable as "maintenance" charges are not treated as such. For example, stamp heads and dies are considered as consumable stores, and replacements are therefore treated as "running" charges.

7. *Elaboration of Costing, etc.*—On some mines, subsidiary and working costs accounts are separated only under "running" and "maintenance." On others a very much more elaborate dissection of the debits to each account is undertaken. This dissection is intended only for statistical purposes. For instance, the cost per ton of hoisting rock may have to be compared, one month with another.

With the charges kept separately only for running and maintenance, it will be difficult to explain to the manager or the engineer the reason for any differences. By splitting up the debits in the storekeeper's and timekeeper's allocation books and summaries, it should be an easy matter to lay one's finger on the spot. It is not within the province of the writer to discuss the merits or demerits of either method, as it is a question solely for the management or the administration of each mine to decide, *i.e.*, whether the results obtained justify the outlay.

8. *Boss or Gang Numbers*.—These are used on many large mines chiefly for the purpose of easily distinguishing and sorting time-sheets, natives' tickets, store requisitions, etc. But with the present system of native timekeeping, these numbers do not seem to be of any special use, except on very large mines, and then only in the case of certain mine contractors—that is, new men who initial their natives' tickets, etc., very illegibly.

### CHAPTER III

#### LIST OF MINE BOOKS, ETC.

9. THE following are the books and documents dealt with in the different departments, and they will be fully described in the next three chapters.

10. *Mine Office*.—Main ledger, subsidiary accounts ledger, sundry persons ledger, journal, cash book, town office cash file, London office cash file, distribution book, bank pass book, construction book, summary of ditto, cost books, gold register, native labour supply book, etc. (See Chapter IV.)

11. *White Timekeeper's Office*.—Time sheets, white pay roll book, mine contractors' cost sheet book, mine contractors' pay roll book, white wages allocation book, record of deductions, agreements of staff, surveyor's measurement sheets, mine contractors' accounts of stores and natives, etc. (See Chapter V.)

12. *Native Timekeeper's Office*.—Natives' tickets, natives' time book, pay roll book, and allocation of wages book. (See Chapter VI.)

13. *Storekeeper's Office*.—Stores requisitions, stores received book, stores ledger, stores issued book (allocation to jobs), stores issued book (separate according to description of stores), stores suppliers' accounts, stores journal or summary of trades accounts, etc. (See Chapter VII.)

## CHAPTER IV

### MINE OFFICE BOOKS, ETC.

14. *Main Ledger*.—This contains all the principal accounts not shown in the subsidiary accounts ledger and the sundry persons ledger (*q.v.*). A portion of the ledger is usually ruled to contain several columns on the debit side, so as to dissect the expenditure under the different sub-heads. For example, the account "general mine expenses" would have separate columns for: Consulting engineers' fees; claims licence charges; insurance; mine police, etc. The columns on each side are generally as follows:

Date.

Particulars.

Job number.

Folio (of journal, etc.).

Amount (as above).

15. *Sundry Persons' Ledger*.—This is intended chiefly for numerous small personal accounts, which are expected to be cleared every month. The total of the balances of this ledger should agree with that in the "sundry persons' account" in the main ledger every month. The postings are from the cash book, journal, distribution book, stores journal, etc. The book is usually in foolscap size, two pages or folios to an opening, and the bulk of the work in this ledger consists of entering the amounts due to stores suppliers from the stores journal, and the amounts paid to them from the town office cash account.

16. (a) *Subsidiary Accounts Ledger*.—This is intended for the impersonal accounts named in par. 1 (a), *i.e.*, for such heads as are subsequently distributed over capital, working costs and sundry accounts, as explained in Chapter VIII, par. 68, etc. (subsidiary accounts), and in Chapter XII (distribution). If the distribution of expenditure

is correctly done, the total debits and credits for the month should balance for each account, and there should be nothing outstanding in any month in any account, that is, these accounts are all "wash-outs."

(b) The subsidiary accounts ledger is posted from the cash book, journal, distribution book, etc. It is sometimes convenient for the ledger to be ruled with more than one column on the debit side. Thus, "electric power" account would have a column for regularly recurring debits on account of power purchased, and another for sundries, with a third for the total. The same course would be followed in regard to electric lighting, sanitation, water supply, etc. For accounts like steam power, air power, hoisting, drill sharpening, maintenance of rock drill machines, tramming and shovelling, a separate column would be allotted to each working shaft, with another for the total. The "compound expenses" account would have several columns, viz., sundries (including total of distribution), food, hospital, labour supply, registration, passes, etc.

17. (a) *Journal*.—This is best kept with as many amount columns as possible on the debit side for :

- Subsidiary accounts items,
- General mine expenses items,
- Mine office expenses items,
- Town office expenses items,
- London and Paris Office expenses items,
- Other workings costs items,
- Capital accounts items,
- Sundries.

(b) This does away with a number of entries in the main ledger, as in the case of, say, general mine expenses, the month's total in that column in this journal would be posted in the main ledger in one entry, "Journal summary, £—," with the expenditure dissected under the various columns for consulting engineer's fees, claims charges, accident, fire and life insurance, mine police, etc. This also helps to ensure the accuracy of the journal figures which are

required before the declaration of working costs and output can be made in the early part of the month.

(c) In this book it is very necessary to have columns for the job number and voucher number immediately preceding the money debit columns.

(d) When not supported by an entry or summary in another book, say, the white pay roll book, each journal entry should be supported by a voucher signed by the secretary and manager. These vouchers are consecutively numbered for each month or each financial year, and filed in proper numerical order, for reference by the company's auditors, etc.

18. (a) *Cash Book*.—In addition to the usual "bank" and "cash" columns, there should be as many as possible on the credit side, as explained in pars. 17 (a) and (b), with extra columns for "white wages," "mine contractors," and "native wages."

(b) At the end of each month, the cash book is balanced, and a statement sent to the town office. At the foot of the account there are the usual entries for debiting and crediting the "manager's cash" account in the main ledger; and, for reconciliation with the bank pass book, a note is made of the numbers and amounts of all cheques issued but not paid during the month.

(c) As in the case of the journal vouchers, par. 17 (d), cash slips should be prepared and filed, for reference by the company's auditors, etc.

(d) *Town Office and London and Paris Office Cash*.—Extracts from the town office and London and Paris office cash books are received every month for posting in the ledgers and inclusion in that month's accounts.

19. (a) *Distribution Book*.—Many book-keepers affect to look upon this book as a sort of freak, but it is an orthodox tabular journal. It does away with innumerable journal and ledger entries, as it collects all amounts chargeable to each sub-head of working costs, capital, etc., while it dissects and charges out the amounts originally debited

to the various subsidiary accounts. For instance, in the case of hoisting rock, it is not enough to know merely the direct debits to this account for stores and wages, but there are also other charges which come through, compound expenses, steam power, etc. And, in the case of any one of these items, say, steam power, not only does it contain debits for stores and wages, but the account has to be distributed against the various engines used for hoisting, for compressing air, for pumping, etc. For further remarks on this point see Chapters VIII and XII.

(b) The columns of the distribution book are headed as follows :

- (1) Accounts debited ;
- (2) Job number ;
- (3) Number of native shifts ;
- (4) Number of workshop units.

Amounts :

- (5) Stores ;
- (6) White wages ;
- (7) Mine contractors ;
- (8) Native wages ;
- (9) to (30) All subsidiary accounts named in par. 1 (a) ;
- (31) Total debits for posting in ledger ;
- (32) Main ledger folio ;
- (33) Subsidiary ledger folio ;
- (34) Debits through journal and cash book, etc. ;
- (35) Credits ;
- (36) Net debits for distribution, etc.

(c) The totals at the foot of columns (5) to (30) show the *credits* to the respective accounts named in the headings of the columns, while the debits to the various accounts are shown in column (31). The credits at foot of columns (9) to (30) should agree with the entries in column (36) for the respective subsidiary accounts.

(d) To understand thoroughly the distribution book, it will be necessary to refer to Chapters VIII and XII.



20. *Bank Pass Book*.—This is the usual book supplied by the bankers. All cheques entered by the bank officials in this book are ticked off in the cash book, thus arriving at particulars of the cheques issued but not cashed by the holders, *vide par. 18 (b)*.

21. (a) *Construction Book*.—This is intended as a sort of combined cost book and subsidiary ledger, showing month by month the expenditure against each separate capital account job, under the different headings, such as stores, wages, etc., posted from the distribution book, as well as all cash book and journal entries, etc. The totals of all jobs under any one capital account, such as surface or underground plant, should agree with the main ledger balance.

(b) The columns in this book are usually taken almost *en bloc* from columns (5) to (30) of the distribution book, with a few extra columns showing details of the principal descriptions of stores. As this book usually records details of all sinking and development expenditure, as well as ordinary construction work, it is, of course, a very large, unwieldy one, especially if expected to last three or four years. If, however, it could be arranged to keep sinking and development figures out of it, the ordinary construction work would require only two or three blank columns in addition to those for stores (six columns), white wages, native wages, compound expenses and workshop expenses.

(c) For sinking and development expenditure, there could be a separate construction book of 50 to 100 folios, which would suffice for the whole life of the mine. This would form an invaluable record, especially if columns were added for the number of feet sunk or driven, etc., every month.

(d) The other book for ordinary construction work, suggested in par. 21 (b) would differ from the sinking and development book in a very important respect, namely, it would relate to jobs which would ordinarily be completed within twelve months. The headings for stores, wages,

etc., could therefore be shown in the left-hand column, with say fourteen money columns, viz., one for the amount brought forward, if any, twelve for any twelve months (blank headings), and one for totals. In this shape one page would ordinarily suffice for any job. Loose sheets could be used and kept in files or bundles arranged in the order of job numbers, and bound together every three or four years.

**22. Construction Summary Book.**—This is intended to summarise the total expenditure for all construction jobs, which are arranged and grouped together under the different capital accounts to which they belong. These totals are checked with the main ledger balances every month. The columns in this book are as follows :

- (1) Construction book folio ;
- (2) Main Ledger folio ;
- (3) Description of work and head of account ;
- (4) Job number ;
- (5) Amount brought forward ;
- (6)–(17) Amounts, January to December ;
- (18) Total carried forward.

One page or portion of a page, is set apart for each capital account named in par. 1 (c), *ante*.

**23. (a) Cost Books.**—The columns in these books are as follows : Items of expenditure, such as stores, wages, etc. ; amount and equivalent per foot, ton, fathom, etc., for six or twelve months ; and totals. The first column contains the names of the items that make up the expenditure, such as white wages, mine contractors' earnings, native wages, etc., as shown in columns (5) to (30) of the distribution book, *vide* par. 19 (b). The "stores" figures are, however, entered in greater detail, separate figures being shown for gelatine, rails, iron and steel, timber, etc. These figures are picked out of the "stores issued" book.

(b) Separate cost books are kept for : Sinking accounts ; development accounts ; stoping accounts ; other working costs accounts ; subsidiary accounts.

24. If further details are required of the entries in the last two books, *i.e.*, if figures are required for each separate job of working costs or subsidiary accounts, the work is more conveniently done on thin cards printed somewhat as follows :

*The front of the Card is used for " RUNNING " and the back of the Card for " MAINTENANCE " Jobs.*

RUNNING.				
.....Account.				.....19..
				(Month.)
Job No.....				
Stores . . .				
White Wages . . .				
Native Wages . . .				
Compound Expenses . . .				
Workshop Expenses . . .				
..... . . .				
..... . . .				
..... . . .				
Total . . .				

25. *Gold Register*.—This is a very important book, being the basis of all credits on account of the output. The columns are as follows :

- (1) Date ;
- (2) Numbers on bars, and marks (M or C, for mill or cyanide) ;
- (3) Bullion ounces (mine or bank weighment) ;
- (4) Fineness of gold (mine assay) ;
- (5) Estimated realisation ;
- (6) Journal folio of *debit* to gold in transit account and *credit* to gold account ;
- (7) Insurance on estimated value ;
- (8) Journal folio of *debit* to gold in transit account and *credit* to the — insurance company's account ;
- (9) Bank charges for freight, refining, etc. ;
- (10) Total expenses (col. 7 plus col. 9) ;

- (11) Gross proceeds of sale (*i.e.*, net credit on sale plus bank charges) ;
- (12) Net proceeds of sale (col. 11, less col. 10) ;
- (13) Surplus<sup>1</sup>—amount ;
- (14) Journal folio of *debit* to gold in transit account, and *credit* to gold account ;
- (15) Deficit<sup>1</sup>—amount ;
- (16) Journal folio of *debit* to gold account and *credit* to gold in transit account ;
- (16) Fine ounces, silver ;
- (17) Value of silver.

Columns 16 and 17 are of no practical use in accounting, as the estimated value posted in column 5 is calculated on the fine gold.

When the account sale is received, the particulars shown in the bank advice are noted in red ink over the original figures in columns 3, 4, 5, 16, and 17.

Par. 143 and 144, Chapter XI, show how the different entries in this register pass through the accounts.

26. *Native Labour Supply Book*.—This is a kind of subsidiary journal for charging out against each month the proper proportion of charges incurred on account of labour used for that month. The book is ruled with the following columns :

- Column (1) Date ;
- (2) Cash book folio ;
  - (3) Name of recruiter ;
  - (4) Rate per head ;
  - (5) Term of contract ;
  - (6) Number of boys for each term ;
  - (7) Total amount due to recruiter for each term ;
  - (8) to (31) monthly apportionment of amounts in column 7 ;
  - (32) amount carried forward.

The postings are as follows in the case of, say, a recruiter who supplies on the 1st of January :

<sup>1</sup> Difference between col. 5 and col. 12.

5 six months' boys at £3, *i.e.*, 10s. per head per mensem.

7 nine months' boys at £4 5s. 6d., *i.e.*, 9s. 6d. per head per mensem.

9 twelve months' boys at £5 5s., *i.e.*, 8s. 9d. per head per mensem.

The entries in columns 8 *et seq.* would be in three lines for the three terms of contract :

£2 10s. each month, January to June, inclusive.

£3 6s. 6d. each month, January to September, inclusive.

£3 18s. 9d. each month, January to December, inclusive.

Every bill being entered in this manner as it is paid, at the end of the month the amounts entered in the column for the month are totalled, and a journal entry passed as follows :

*Debit*, Native compound expenses account £.....

*Credit*, Native labour supply account £.....

27. There are some other books kept up, but they are more of the nature of note-books, such as the shares investment ledger, bills payable and receivable books, etc.

## CHAPTER V

### WHITE TIMEKEEPER'S OFFICE BOOKS, ETC.

28. THE objects of white timekeeping are to ascertain, collect and record : (1) the amounts due to white employees as salaries, wages, overtime, etc. ; (2) the jobs to which such accounts are to be debited in the allocation of wages ; (3) deductions due from employees on account of rent, board, etc. ; (4) net amounts due to employees.

29. For the majority of "staff" men, *i.e.*, those on monthly salaries, there is little or no difficulty in the allocation of their earnings to the proper accounts. Thus, the office and store employees' salaries are debited to "mine office expenses" ; the surveyors', assayers', and samplers' salaries to their respective accounts, etc.

30. (a) *Time Sheets*.—These are usually used for men like fitters, carpenters, etc., as well as underground men, who are likely to work on different jobs from day to day. On a mine where there is a large permanent white staff working, say, at the ore reduction works, the battery and cyanide foremen sometimes keep up a small time-book for the white men under them. The entries in these books are transferred at the end of the month into the timekeeper's records. (It is only where the white staff is numerous that there is any apparent advantage in this, but as time-sheets are designed almost specially to prevent foremen being treated as walking timekeepers, it is not very obvious how the use of these time-books can be defended.)

(b) Time-sheets are printed on the face of envelopes intended to contain the tickets of the natives working under the respective white men. The following is the usual form of time-sheets :

.....G.M. Co.

SURFACE.<sup>1</sup>

Time Sheet for..... 19 .

Description of Work.	Job.No.	Hours or Shifts.	No. of Native Tickets enclosed.	Remarks. <sup>2</sup>
Totals .. ..				

Signature.....

Occupation .....

Foreman's Signature.

Mine contractors' time-sheets are really used only for submission of the natives' tickets, and differ very slightly from the above. They usually show the class of work, *i.e.*, sinking, driving, raising, winding, etc., the number of machines, and the number of natives on each class of work.

(c) Envelopes of different colours and sizes are used, to distinguish the different classes of employees or the descriptions of jobs on which they work.

(d) The time-sheets are deposited by the men concerned or by their foremen, in a locked letter-box put up in a centrally situated place. The native timekeeper clears the box, and after removing and checking the contents of the envelopes, sends on the latter to the white timekeeper.

(e) In the latter's office, the time-sheets are first sorted out in the order in which the men's names appear in the pay roll-book, into which the total number of hours or shifts worked by each man is posted. They are then posted into the allocation book, the folio number of which is noted in red ink or pencil against each item in the time-sheets.

<sup>1</sup> Or Underground.

<sup>2</sup> A remark "workshop" is made if the work is done there, and has therefore to bear a portion of workshop expenses.

After this the time-sheets are put away carefully for future reference, each man's time-sheets for the month being kept together.

31. (a) *White Pay Roll Book*.—This is really an attendance register and pay-roll combined, and the following are the usual columns :

- (1) No. of entry on page ;
- (2) Name of employee ;
- (3) Occupation ;
- (4)–(34) Number of hours or shifts worked each day ;
- (35) Total number of hours or shifts, ordinary ;
- (36) Do., overtime ;
- (37) Rate per hour or shift ;
- (37) Amount earned, ordinary ;
- (39) Do., overtime ;
- (40) Total amount earned ;
- (41) Deductions on account of rent ;
- (42) Deductions on account of board ;
- (43) Deductions on account of sick fund ;
- (44) Net amount due ;
- (45) Cheque number ;
- (46) No. of entry on page.

(b) The posting of the hours or shifts is done from the time-sheets *vide* par. 30 (e), and foremen's time-books, *vide* par. 30 (a). Ordinary working hours or shifts are entered on the line, and overtime hours or shifts slightly above the line.

(c) The total of the amounts entered in column (40) is that charged out through the distribution (*vide* Chapter XII), and a summary is prepared at foot of each month's entries as follows :

Col. (40)	Total amount earned	£.....	Distribution book folio ...
„ (41)	Less Rent	£.....	Journal folio ....
„ (42)	„ Board	£.....	„ .....
„ (43)	„ Sick Fund	£.....	„ .....
„ (44)	Net amount paid (to agree with white wages column of cash book).		

32 (a) *White Wages Allocation Book*.—There are two



methods chiefly in vogue for the allocation of white wages, the choice depending on the predominance or otherwise of new construction work.

(b) Where there is little or no construction work going on, the form of book adopted has the following columns :

- (1) Job number ;
- (2) Nature of work ;
- (3) Name of employee ;
- (4) Occupation ;
- (5)-(35) Hours or shifts worked each day ;
- (36) Rate per hour or shift ;
- (37) Total amount earned ;
- (38) Number of natives' shifts ;
- (39) Amount earned by natives.

(c) In a book of this sort the entries are arranged in the order of the jobs, about two to four or more jobs on each page. Thus, for a man employed on three or four jobs, for a few hours each on one day, there would be an entry of his time on the different pages on which the different jobs appear. (It is obvious that with many construction jobs open at the same time, this is not a very simple or easy method of posting.) At the end of the month the amount due on each job is worked out, and the total of column (37) should agree with the total of column (40) of the white pay roll-book. In the case of any discrepancy, which can hardly be avoided, the entries in the allocation book are posted again on rough sheets, separately for each man. These amounts are checked with the entries in the white pay roll-book, and discrepancies are put right by going through the time-sheets of the men concerned, and correcting the allocation book or the white pay roll-book.

(d) The advantage of this method is that when the last time-sheet is posted, the only work remaining is the extending and casting of the allocation book entries, and checking them with the white pay roll-book. Briefly, the daily postings are more tedious, but a great saving of work and time is effected at the close of the month, when

the allocation figures are urgently required for the final distribution of costs.

(e) When, on the other hand, there is a great deal of new construction work going on, another method of allocation is sometimes preferred. Two books are used, one for details, and the other as a sort of summary.

(f) The first book, for "details," is printed as follows, one page, or a portion of a page, being used for each man :

Allocation (Details).

Name..... Rate per hour or shift....  
Occupation.....19..  
(Month.)

Job No.	Name of Account and Description of Work.	Number of Hours or Shifts. (32 columns.)	Amount.
		1st to 31st and Total.	
	Total, ordinary .. ..		
	Total, overtime .. ..		
	Grand Total .. ..		

(g) The time-sheets are entered direct into this book, and when the press of work is over, that is, after the allocation figures have been got out, the hours or shifts worked each day by each man are copied from this book into the white pay roll-book. Of course, the totals in the two books must agree, but it is necessary to check this carefully.

(h) After the close of the month, when all the time-sheets have been posted into the allocation (details) book, the pages are extended and cast, and the amounts debitable to the different jobs are transferred to the other allocation (summary) book, which has the following columns :

- (1) Job number ;
- (2) Name of account and description of work ;
- (3) " Details " book folio ;
- (4) White employees' number of hours or shifts ;
- (5) White employees' amount ;
- (6) White employees' totals ;
- (7) Natives' number of shifts ;
- (8) Natives' amounts ;
- (9) Natives' totals.

(j) With this method of allocation it is advisable to have three or four " details " books for the different classes of employees, and three or four " summary " books for the different descriptions of accounts, viz., subsidiary accounts working costs, capital and sundry accounts. This allows of two or more men being simultaneously engaged on the daily postings, and also on the transferring of totals from one book to the other.

(k) It will be observed that although the check mentioned in par. 32 (c) between the allocation and pay roll books becomes a trifling matter, no headway can be made with the final allocation till after the close of the month, when the totals are transferred from the " details " book to the " summary " book, and this is a very laborious task, which has to be undertaken at high pressure, so as to get the allocation summary ready for the final distribution work.

(l) The number of shifts worked and amounts earned by natives are posted into the allocation book from the native timekeeper's allocation summary (*vide* par. 49).

(m) For natives working under carpenters, fitters, etc., the native timekeeper is required to show in this summary only the particulars for each group of white men, and not for each job. The white men's shifts, or hours worked, or wages due on each job, are then posted on to rough sheets, a separate sheet being used for each group. The native shifts or wages are then allocated to the different jobs on the basis of the white men's time or money. In

very special cases, where an unusually large number of natives is employed on any particular job, these are debited direct to the job before the balance is allocated as explained above.

(n) After the allocation figures are ready and have been balanced with the total of column 40 of the white pay-roll, the timekeeper prepares a summary of the allocation, as follows :

- Column
- (1) White wages allocation book folio ;
  - (2) Name of account debited ;
  - (3) Name of sub-head of ditto ;
  - (4) White wages ;
  - (5) Totals ;
  - (6) Native wages ;
  - (7) Totals ;
  - (8) Number of native shifts—Day's pay men ;
  - (9) Ditto Contractors' men ;
  - (10) Totals ;
  - (11) Number of workshop hours ;
  - (12) Totals.

Columns 11 and 12 will be explained in Chapter VIII, in connection with "workshop expenses" account.

33 (a) There is, however, a very much simpler, cheaper, and more accurate method of allocation of white wages which could be substituted for either of the above, namely, the use of small, thin cards, one being used for each job on which a man is employed during the month.

(b) Cards of different colours should be used, say, white for subsidiary accounts, yellow for working cost accounts, pink for capital accounts, green for sundry accounts. Index cards would be used showing the men's names, and the cards would be arranged during the month according to the order in which the men's names are entered in the white pay roll-book, or even alphabetically. At the end of the month the cards would be totalled, and the amounts filled in. These would be balanced with the entries in the white pay roll-book, and this would satisfy the check

mentioned in par. 32 (c). The cards would now be sorted out according to job numbers, the different colours helping in this process.

Name .....		
Occupation .....		
Job No. ....		Rate.....
....., 19..		
/ (Month.)		
.....		
No. of Hours or Shifts.		
1 ....	12 ....	23 ....
2 ....	13 ....	24 ....
3 ....	14 ....	25 ....
4 ....	15 ....	26 ....
5 ....	16 ....	27 ....
6 ....	17 ....	28 ....
7 ....	18 ....	29 ....
8 ....	19 ....	30 ....
9 ....	20 ....	31 ....
10 ....	21 ....	
11 ....	22 ....	
Total hours or shifts		
Amount .. .. £		

(c) After sorting, the cards might be numbered consecutively, and the totals would be posted into the allocation (summary) books explained in par. 32 (h).

(d) The cost of these cards would be very much less than that of the allocation (details) books mentioned in par. 32 (f).

34. In addition to the above, there is another simple but slightly more rough and ready method of allocation of workshop mechanics' wages. A large sheet is prepared like that explained in par. 32, only that instead of it being the record of one man's time, the total number of hours worked by all mechanics are entered daily against each job. (There may be one sheet for all the mechanics or one for each shop.) The total number of hours posted should

agree with the entries in the time book for each day. At the end of the month an average rate of wages per hour is struck for the month, and each job is thus debited with the wages of all mechanics in one lump sum in the allocation book. One drawback in this method is that in case of, say, a very heavy and apparently inexplicable debit against any particular job, the engineer is unable to see how it has been arrived at without going through the time sheets in detail.

35. (a) *Mine Contractors' Cost Sheets*.—These are generally printed in duplicate for use with carbon paper, one copy being handed to the payee with his cheque. The following are the three portions of this form :

The top portion shows the contractors' earnings, as follows: Shaft ; level ; class of work (*e.g.*, drive winze, stope, etc.) ; feet or fathoms ; rate per ditto ; amount ; gross total.

The middle portion shows deductions on account of natives and stores :

Contract deductions—	
.... Native shifts, wages @ .....	£.....
.... " " food @ .....	£.....
.... " overtime	£.....
.... Cases gelatine, etc., @.....	£.....
.... Coils fuse @ .....	£.....
.... Lbs. carbide @ .....	£.....
etc.	
	Total £.....
Net amount earned	<u>£.....</u>

(b) The surveyor supplies measurements of the work done, the storekeeper the stores account, and the native timekeeper the natives' account. The white timekeeper is himself responsible for the correctness of the rent, etc.

(c) The periods for which mine contractors are paid vary, and have to be carefully noted. The surveyor can measure up only a few of the mine contractors' work each day, and this day is taken as the first day of the following working month.

The bottom portion of the form shows each partner's personal deductions :

Name of Partner, etc. ..	Smith.	Jones.	Learner, Brown.	Totals.
No. of Shifts .. ..				
Net Amount earned ..				
Deductions o/a :—				
Rent .. ..				
Board .. ..				
Sick Fund, etc. ..				
Total Deductions ..				
Net Paid .. ..				

Note.—Drill sharpening and tramming contractors are treated as mine contractors.

36. (a) *Mine Contractors' Pay Roll-Book*.—This is posted from the cost sheets, and is ruled as follows :

Column (1) Nature of work ;

(2) Shaft ;

(3) Names of contractors ;

(4) Number of feet, fathoms, etc. ;

(5) Rate per ditto ;

(6) Gross amount earned ;

(7) Deductions on account of native wages and overtime ;

(8) Ditto, native compound expenses ;

(9) Ditto, stores ;

(10) Total deductions ;

(11) Net amount earned ;

(12) Deductions on account of rent ;

(13) Deductions on account of board ;

(14) Deductions on account of sick fund ;

(15) Total deductions ;

(16) Net amount paid ;

(17) Cheque number ;

(18) Number of white shifts ;

(19) Number of natives' shifts.

(b) The month's figures are summarised at the foot as follows :

Col. (11)	Net amount earned, £.....	Distribution book, folio...
„ (12)	Rent .. .. £.....	Journal folio ....
„ (13)	Board .. .. £.....	„ ....
„ (14)	Sick Fund .. £.....	„ ....
„ (15)	Net payment (to agree with total of mine contractors' column in cash book).	

(c) When the entries are complete and totals filled in, an allocation summary is prepared as follows :

Column (1) Nature of work and job No. ;

- (2) Shaft ;
- (3) Number of feet or fathoms ;
- (4) Gross amount earned ;
- (5) Deductions on account of native wages ;
- (6) Deductions on account of native compound expenses ;
- (7) Deductions on account of stores ;
- (8) Total deductions ;
- (9) Net amount earned ;
- (10) Number of white shifts ;
- (11) Number of natives' shifts ;
- (12) Number of cases of gelatine, etc.

(d) In preparing this summary, some difficulty is experienced where men are employed on more than one class of work. It is impossible, of course, to arrange that a mine contractor should be employed on only one class of work, and he very frequently works both on stoping and sinking, or stoping and development, etc. His costs have therefore to be split up by the timekeeper. This is worked out approximately either on the tonnage broken, or the quantity of explosives used, which latter information is obtained through the mine captain from the contractor himself.

37. (a) *Deductions from Employees' Earnings.*—The timekeeper sees that he gets a list of all amounts due to the boarding-house keeper. The rents, etc., are recorded by him.



(b) Usually a very elaborate system is adopted for recording the rental and occupancy of rooms and cottages owned by the company. A printed register is kept, and the first portion of the book is ruled to contain the following information, one page being set apart for each room and cottage :

Number of room or cottage ;

Where situated ;

Name of tenant ;

Occupation of ditto ;

Date tenanted ;

Date vacated ;

Rent per mensem ;

Remarks.

The concluding portion of the book is an alphabetical index of the names of occupants.

(c) The other deductions on account of sick fund, recreation club, etc., scarcely require any special record, as in most cases they are uniform in the rates and universal in their application.

38. There are, however, enquiries which frequently arise during the course of a man's employment, and these particulars have to be groped about for and gleaned in various directions. For such purposes, as well as for keeping rent and other records, a good plan is to adopt the card index system as follows :

Name in full ;

Nationality ;

Religion ;

Date and place of birth ;

Name and address of nearest relative or friend in South Africa or at Home ;

Date of appointment ;

Occupation ;

Rate of pay ;

Progressive number of agreement ;

Subsequent alterations of rate of pay and occupation, with dates ;

Amount deducted for key deposit ;  
Month in which deducted ;  
Month in which refunded ;  
Room or cottage number ;  
Rent ;  
Sick fund ;  
Recreation club ;  
Date left ;  
Why left ; etc.

The record showing how each room or cottage is occupied at the time, and the rental, could be kept in pencil on skeleton plans showing the numbers of the rooms, etc.

39. *Employees' Agreements.*—Two copies are filled up, one of which is handed to the employee. These are filed in various ways, but the simplest seems to be to number the agreements consecutively, as executed, and keep a note of the numbers. When an employee leaves the service, his agreement can be taken out of the bundle and either destroyed or placed in a separate bundle.

## CHAPTER VI

### NATIVE TIMEKEEPING

40. The objects of native timekeeping are to ascertain, collect and record :

- (1) The amounts of wages earned by each native and the number of shifts worked during the month ;
- (2) The jobs to which such amounts and shifts are debitable ;
- (3) The amount of wages paid to each boy ;
- (4) The amount of wages earned and not paid during the month, but carried forward to the next month ;
- (5) Statistics of inches drilled, etc. ;
- (6) Amounts due by mine contractors on account of wages earned by boys working for them, and the number of shifts.

41. *Suspense Wages*.—Natives who have earned wages for thirty shifts are paid on a fixed day of the week. The debits to other accounts consist of the wages *earned* during the month (but not necessarily paid during the month), and, consequently, there is always a difference between the two which is outstanding and is carried forward from month to month. This amount is called the "suspense wages."

42. *Natives' Daily Tickets*.—Each native is given a book of thirty tickets printed in counterfoil, with his mine number printed or stamped by hand, and, if on day's pay, his rate of pay stamped by hand on each ticket. The other blank spaces on the ticket are for : Date ; job number ; number of inches drilled or trucks handled, etc. ; signature of boss. A slip at the end of the book provides spaces for :  
Native's mine number (printed or stamped) ;  
Rate of pay ;  
Name known by ;  
Date of issue ;

Progressive number of ticket book issued to the boy ;  
Amount earned ;  
Deductions ;  
Net payment ;  
Native timekeeper's signature.

Overtime is separately dealt with (*vide* par. 54).

43. On completion of his day's work, each native presents his ticket book to his boss, who fills in both foils, retaining the counterfoil for submission to the time office, and giving back the book to the boy. The counterfoils which have been kept by the boss are placed inside an envelope (time sheet), see par. 30 (*d*), Chap. V ; these envelopes are removed by the native timekeeper to his office, where they are opened and the native tickets removed after being checked with the entries on the envelopes.

44. Each envelope's contents are placed in a separate heap, except where two or more shifts of natives are employed on the same job—say, banksmen's or firemen's boys. These heaps are lumped together. The same is done with carpenters' boys, etc.

45. Boys at fixed rates per shift have their rates impressed on their tickets by means of a rubber stamp at the time of issue. Contract boys have only the number of inches drilled, or trucks handled, entered on them by their bosses after the day's work. The amount earned has therefore to be entered by the native timekeeper on each such ticket, according to the schedule of rates in force on the mine. On the back of one ticket of each heap a summary is made of all the tickets in the heap, showing the number of tickets and the rates or amount earned. The others are put aside for sorting into numerical order.

46 (*a*) *Record of Contract Boys' Tickets*.—The objects aimed at are : (1) Amount due from each mine contractor on account of wages, etc., for natives working for him ; (2) amount due to each boy ; (3) the total and average inches drilled or trucks handled by each gang or by all the gangs.

(b) On mines where the time books are not kept (*vide* par. 51), the amount earned by each contract boy and inches drilled or trucks handled are entered either in a register or on loose sheets, a separate sheet, or portion of a sheet, being set apart for each gang.

(c) A simple way of recording these figures is as follows :

J. Jones, Mine Contractor.      December, 19..										
Date.	No. of Shifts @								Total.	Average.
	42"	41"	40"	38"	36"	34"	33"	30"		
1st	14	1			20	4	2	7	48	
2nd	13		2		18	3	1	9	46	
3rd	12		1		22	2	3	8	48	
etc.										
Total Shifts.	375	20	23		500	80	62	240	1,300	
Rate.	1/9	1/8½	1/8	1/7	1/6	1/5	1/4½	1/3		
Amount.	£ s. d. 32 16 3	1 14 2	1 18 4		37 10 0	5 13 4	4 5 3	15 0 0	98 17 4	1/6.51
Total inches.	15,750	820	920		18,000	2,730	2,044	7,200	47,464	36.51

This record provides for all requirements as regards debits against mine contractors, as well as statistics, etc.

47. *Allocation of Native Wages.*—After the contract boys' tickets are disposed of, the allocation of the daily paid boys' shifts and wages is proceeded with. The following four alternative styles of record are presented for selection :

## A.

	Job No.	1st	2nd	3rd	etc., etc.	Total.		
Banking, A Shaft Blacksmiths, etc.	A 73	14/6	13/-	14/6	etc., etc.	16	13	0

## B.

Date.	A73—Banking.	Blacksmiths.	etc.
	Amount.	Amount.	etc.
1st	14/6		
2nd	13/-		
3rd	14/6		
etc.	etc.		
Totals	£16 13 0		

Note.—Separate books have to be kept in these two cases for shifts and amounts.

## C.

	Job No.	Rate	Shifts.					Amount.		
			1st	2nd	3rd	etc.	Total			
Banking, A Shaft ..	A73	2/6	1	1	1	etc.	26	3	5	0
		2/-	3	3	4	etc.	75	7	14	0
		1/6	4	3	3	etc.	76	5	14	0
Blacksmiths etc.		2/4 etc.								
Totals ..			8	7	8	etc.	177	16	13	0

D.

	A73, BANKING.				Blacksmiths.					
	2/6	2/-	1/6	Total	2/4	1/6	1/3	1/-	Total	
1st	1	3	4	8						and so on
2nd	1	2	3	7						
3rd etc.	1	4	3	8						
Total Shifts	26	75	76	177						
Wages. £ s. d.	3 5 0	7 14 0	5 14 0	16 13 0						
Overtime. £ s. d.										

A and C are books ruled like ordinary time books, and B and D are ruled contrariwise. A and B show merely the total wages for each day in one book and the total shifts for each day in another book. C and D show the shifts at each rate for each day, and are easy to post, while errors are more easily detected. In either case, B and D are easier to cast up at the end of the month, and therefore the choice naturally falls on D as the most suitable.

48. As stated in par. 45 *ante*, one ticket corresponding to each job or boss is set aside, with a summary of the tickets of the gang at the back. These tickets are then arranged in the order of the jobs or bosses as entered in the allocation book or sheets, and the posting is simple and straightforward.

49. The allocation book or sheets are cast up and balanced at the end of the month, and a summary prepared, with columns, as follows :

- (1) Account debited ;
- (2) Sub-head of ditto ;
- (3) Job number ;
- (4) Native shifts—number ;
- (5) Native shifts—total ;
- (6) Amounts ;
- (7) Amounts—totals.

This summary is handed to the white timekeeper for incorporation in his summary, *vide* par. 32 (l), (m) and (n).

50. *Disposal and Record of Tickets*.—After posting the allocation register or sheets, the tickets for the day are sorted into numerical order (*i.e.*, the natives' mine numbers), and they are posted into the time book, where one is kept (*vide* par. 51). There are large boards fitted up with spikes about 3 in. or 4 in. long, in rows of fifty or 100, one spike for each boy's tickets. On most mines, card discs of different colours are affixed to the spikes when the boys are in hospital, etc. (The hospital superintendent supplies a daily return showing those in hospital, as well as the discharges and admissions for the day.) When the day's tickets are placed on their spikes, it is a very easy matter to account for every boy every day.

51 (a) *Time Books*.—These are not kept up on all mines, but where they are used they are ruled with columns as follows :

- (1) Number of shifts brought forward ;
- (2) Wages brought forward ;
- (3) Boy's number ;
- (4)–(34) Amount earned, 1st to 31st ;
- (35) Total number of shifts worked during the month ;
- (36) Wages earned during the month ;
- (37) Total amount paid during the month ;
- (38) Number of shifts carried forward ;
- (39) Wages carried forward.

Sometimes five columns like (37) are provided for the five possible pay-days of the month, so that the totals may be easily balanced with the pay roll-book. As stated in par.



50, after the allocation for the day has been posted, the amount earned by each boy is entered in the time book from the loose counterfoils of the boys' tickets.

(b) At the end of the month a summary is made at foot as follows :

Brought forward	..	Shifts.	Amount.
Earned	.. ..		
Total	.. ..		
Paid	.. ..		
Carried forward	..		

(c) On most mines time books are considered unnecessary and obsolete. With the counterfoil tickets now in use, it seems unaccountable how time books can be considered indispensable. It would seem, however, that having become accustomed to the use of time books in the case of Chinese labourers, as required under the Chinese Labour Ordinance and Regulations, some mine officials cannot bring themselves to see how the books can be done without. There is no important information in the time book which cannot be easily obtained from the counterfoils or book foils of the natives' tickets.

(d) Where no time book is kept, the only extra work entailed is at the end of the month when the amount of the "suspense wages" is required for comparison with the ledger. This, however, need not be done oftener than once in six months, as, if the allocation figures are correct, the suspense can be easily arrived at. In any case, it is not absolutely necessary to record *each native's* suspense; this is accurately recorded in his ticket book. All that is required is the total amount for all natives, and this is easily obtained from the tickets on the spikes after the last day's tickets have been placed on them. In the case of contract boys, the rough memo. on which the odd days' earnings for each boy are jotted down might be put away

on the spike, as it will help when making up their wages for their completed book.

(e) In any case, even if a time book is kept, it is unsafe to trust to it alone, as errors *will* creep in, and when a contract boy's ticket book comes up for payment, it is always desirable to post the amount earned daily on scribbling paper from the book foils. If there is any difference, as is frequently the case (not only through errors in the time book), the loose foils of his tickets have to be similarly posted roughly, and the three results compared and reconciled.

52. *Pay Rolls and Pay Roll Books*.—These are ruled with columns as follows :

- (1) Pay roll entry number (from 1 consecutively) ;
- (2) Boy's mine number ;
- (3) Gross amount due ;
- (4) Deductions on account of advances ;
- (5) Deductions on account of clothing, etc. ;
- (6) Total deductions ;
- (7) Net amount due.

There should be no more than about twenty-five lines on a page. This book, or an extract from it, is treated as the journal voucher for the journal entries of the different deductions. In some cases, only columns (1), (2) and (7) are used, but, in these instances, monthly statements of all deductions have to be prepared for submission as journal vouchers. This seems the better method.

53. (a) *Payment of Wages*.—When a boy's ticket book is complete, *i.e.*, after he has earned wages for thirty shifts, he hands the butt-end of it to the native timekeeper and receives a new book. The amount of wages due to him is ascertained from the book foils and checked with the counterfoils or with the time book, where one is kept up, and sometimes with both, as explained in par. 51 (e) *ante*.

(b) The pay-slip mentioned in par. 42 is filled up and the amount entered in the pay roll or pay roll-book. All pay-slips ready for payment are arranged in order of the boys' mine numbers, and then re-numbered consecutively

each week from one upwards, to correspond with the entry in the pay roll. These pay-slips are handed out to their owners, who are identified by presenting their new ticket books and declaring their names.

(c) Wages are paid in cash, each boy's money being placed in an envelope previously numbered to correspond with the pay roll number. The native timekeeper makes out a list of the number of the different kinds of coin required. (This should be done for each page of the pay roll separately.) The secretary cashes the cheques accordingly, and arranges the money on a table in rows corresponding to the pages of the pay roll. The timekeeper calls out the pay roll number and the net amount; the secretary, or one of his staff, takes up the necessary coins and hands them to the timekeeper or a third party, who places the cash in the boy's envelope. It is thus easy to see that there is no mistake either way in making up the cash, and if one does occur it is easily detected and rectified. The envelopes are then fastened and delivered by the secretary, or one of his staff, to the natives in exchange for their pay-slips. This is done in the compound manager's presence.

54. *Overtime*.—Special cards are given to natives for overtime as it is earned.

Number of boy ;  
Date ;  
Name or number of boss ;  
Name or number of job ;  
Amount (usually printed) ;  
Signature of boss ;  
Signature of foreman.

These cards are presented for payment in cash after the wages are handed out. At the end of the month, the cards are sorted out for allocation to the different jobs the boys worked on.

55. *Cancelling Stamp*.—A rubber stamp with the word "Paid" and the date should be used to stamp all pay-slips and overtime cards. (This stamp could be used in the mine office at other times.)

## CHAPTER VII

### STOREKEEPER'S OFFICE BOOKS

56. THE objects aimed at in the storekeeper's office are to keep a record of :

- (1) Stores received daily ;
- (2) Amount due to each supplier ;
- (3) Stores issued daily, weight or number of each description of stores issued to each job, arranged according to—
  - (a) Description of stores issued,
  - (b) Jobs for which issued ;
- (4) Balance of stores of each description on hand at any time.

57. (a) *Receipt of Stores*.—Requisitions are issued for stores required to the town buyers, who place the orders with the suppliers. The stores supplied are accompanied by one and sometimes two copies of an invoice, showing in detail the description of goods, and the weight, price and value.

(b) The goods are carefully checked with the invoices on receipt, and the latter are entered in the stores invoice book or the stores received book, which has the following columns :

Date ;  
Name of supplier ;  
Description of goods, and number or weight, etc. ;  
Invoice rate ;  
Invoice price ;  
Stores ledger folio ;  
Total invoice amount ;  
Discount ;  
Net invoice amount.

On some mines, the suppliers' accounts, with copies of invoices attached, are pasted into the book, overlapping

each other, with only the suppliers' names visible, and only the last four columns are filled in against each account.

58. (a) *Stores Journal or Summary of Trade Accounts.*—Each supplier submits a statement of account at the end of the month. The invoices are attached to each statement after being checked therewith. The amount due to each supplier is entered into the stores journal or summary of trade accounts, ruled as follows :

Name of supplier ;  
Net invoice amount ;  
Discount ;  
Total invoice amount ;  
Sundry persons' ledger folio.

(b) A hypothetical "summary of trade accounts" is given below, showing how the totals should be dealt with :

	Net Invoice Amount.	Discount at 2½ per Cent.	Total Invoice Amount.
Jones & Co. . . . .	£ 975	£ 25	£ 1,000
Smith & Co. . . . .	1,950	50	2,000
Direct Purchases . . .	100	Nil.	100
Total . . . £	3,025	75	3,100

£3,100 is debited to "Stores" account ; £3,025 is credited to "Sundry Persons' Account" ; £75 is credited to "Purchasing Agency Account."

(c) An extract of the stores journal entries is sent to the town office, with the original statements of account, for payment by cheque. When payment is made, each supplier's account is debited in the sundry person's ledger. The credit to "Purchasing Agency Account" covers the expenditure on the town buyer and his staff.

59. *Issues.*—When stores are required for any job, the workman in charge, or the foreman, submits a requisition, with the following particulars :

Date ;  
Job number and description of work ;  
Description of stores ;  
Number or weight, etc. ;  
Remarks ;  
Signature.

60. (a) *Allocation*.—Two allocations are made corresponding with clauses 3 (a) and 3 (b) of par. 56. The grand totals of these allocations have to agree. These books are, of course, posted from the requisitions mentioned in par. 59.

(b) The first allocation (according to the nomenclature of stores) is prepared on loose sheets, which are afterwards bound together for each month. There are the following columns, and a page, or portion of a page, is set apart for each description of stores :

Job number ;  
Unit (*i.e.*, dozen, ton, lbs., gal., etc.) ;  
Number of units, 32 columns, one for each day, and one for the total ;  
Price ;  
Amount.

(c) The total at foot of each page is entered in the "issue" side of the corresponding page in the stores ledger. On some mines, it is considered that there is no necessity for keeping up this allocation book, as the total issues of each description of stores for each job are easily ascertained from the second allocation book explained in the following paragraph.

(d) The second allocation book has the following columns, one page, or portion of a page, being used for each separate job. Each mine contractor's stores are treated as issues to a separate job :

Description of stores ;  
Unit (*i.e.*, dozen, ton, lbs., gal., etc.) ;  
Daily issues, 1st to 31st, and totals ;  
Price ;  
Amount ;  
Totals.

61. *Allocation Summary*.—From the second allocation book described in par. 60 (*d*), a monthly summary is made for the office, with the following columns :

Job number ;  
Name of account debited ;  
Sub-head of ditto ;  
Amount for each job ;  
Total for each account.

62. (*a*) *Card Index Method of Allocation*.—An easier method of posting the allocation of stores, and certainly a more accurate method, would be by means of the card system mentioned in par. 33.

(*b*) Each description of stores for which a separate account is kept in the stores ledger would have a separate index card. Cards of different colours would be used. During the month the cards would be arranged according to the nomenclature of the stores, a separate card being put in for each job. After the cards are totalled, the two allocation books, which would not require the daily columns, could be easily posted and balanced.

63. (*a*) *Stores Ledger*.—The columns in this book are as follows :

Dr. (Received) ;  
Date ;  
Name of supplier ;  
Stores received book folio ;  
Number or weight, etc. ;<sup>1</sup>  
Price ;  
Value ;  
Total.  
Cr. (Issued) : Date ;  
Allocation book folio ;  
Number or weight, etc. ;<sup>1</sup>  
Price ;  
Value.

<sup>1</sup> Note.—In the second half of the ledger there are a number of such columns on each page for recording the receipt and issues of stores like iron of different sections issued at the same price per lb.

(b) The entries on the "received" side are taken from the suppliers' invoices, and those on the "issued" side from the stores allocation book mentioned in par. 60 (b), *i.e.*, only the totals of the issues for the month are shown in the ledger.

64. *Summary of Balances.*—At the end of every month after the stores ledger is posted, a balance is struck on each page and posted into the "stores balances" book, which is ruled as follows :

- Column (1) Ledger folio ;
- (2) Description of stores ;
- (3)–(14) Amounts for twelve months.

65. *Stores Price Book.*—This contains a list of all stores shown in the ledger, with the issue prices worked out as closely as possible. An index book is used, but it would be more useful if, in addition to the prices, the book showed the unit (*i.e.*, dozen, foot, ton, gal., etc.) corresponding to each entry, as well as the stores ledger folio. On most mines the unit of charge can be obtained only from the ledger, and it is obvious that this information should always be more easily accessible.

66. (a) *Standing Requisitions.*—This is a very handy method of issuing small quantities of stores for different jobs at regular periods, but it does not seem to have been taken up on the Rand. The saving in making out and posting numerous petty requisitions would be considerable. For instance, each hoisting or compressor engine-driver requires a small quantity of petty stores, such as waste, oil, grease, soap, etc., every week ; or the skip tenders and banksmen have to issue small lots of candles, carbide, etc., to daily paid men. Instead of issuing a requisition for each lot of petty stores every time, a statement is prepared and posted up in the storekeeper's office, with extracts in the respective engine-houses, etc., showing the quantity required, etc. (as shown on p. 43).

(b) The storekeeper would find it much easier to post up his allocations from this than from numerous petty



requisitions. The chief benefit derived from this system of standing requisitions, however, is economy in stores, as it must necessarily be easier for the manager or the engineer to watch the issues and consumption, and cut down the scale, than with the present system.

## STANDING REQUISITION.

Job No.	To be supplied to.	Day of Delivery.	Description of Stores.	Unit.	No. or Weight.
B 111 R	" B " Winding Engine Driver	Monday	Cotton waste Lubric. oil Grease Soap	Lbs. Gals. Lbs. Lbs.	
A 100 R	" A " Compressor Driver	Monday	Waste, etc.	Lbs.	
C 110 R	" C " Banksman	Daily	Candles	Box	
A 110 R	" A " Skip-tender	Daily	Candles	Box	
60 R	{ Fitter Fore- man	{ Satur- days	{ Lubric. oil Waste Soap, etc.	Gals.	
61 R				Lbs.	
62 R				Lbs.	
63 R				Lbs.	

## CHAPTER VIII

### SUBSIDIARY ACCOUNTS

67. A LIST of these accounts is given in Chapter I, and par. 1 (a) shows how the ledger accounts are kept.

68. The basis on which these accounts are charged out to working costs, capital and sundry accounts differs, of course, in each case. The distribution is based in most instances on information supplied by the technical officials of the mine. For example, the engineer supplies the basis for distributing "steam power," the mine captain that for "air power," the ore reduction officer that for "precipitation," etc.

69. Special attention is here directed to par. 7, Chapter II (job numbers), regarding the dissection of subsidiary accounts. In the following pages, the most elaborate system will be explained, but if less details are required, the information can always be applied, *mutatis mutandis*.

70. When distributing or charging out the various subsidiary accounts to working cost accounts, etc., though the timekeeper and storekeeper may show the debits separately for each job in a subsidiary account, no notice is taken, at this stage, of this dissection of subsidiary accounts, which, as explained in par. 7, is merely for statistical purposes. The amounts debited to each subsidiary account in the main distribution are totals shown in the storekeeper's and timekeeper's allocation summaries against each subsidiary account.

71. The following is a description of all subsidiary accounts :

72. (a) *Electric Power Account*.—This includes the cost of electric current supplied to the different motors at work on the mine ; plus stores, wages of the white men and natives employed on transformers, wires, cables, poles, etc., which are employed for general purposes. The sub-division of

this account into jobs would be as follows in the time-keeper's and storekeeper's allocation summaries :

Job No.

- 1 R. General running, including cost of current.
- 2 R. Maintenance of transformer houses.
- 3 M. Maintenance of transformers.
- 4 M. Maintenance of surface wires, poles, etc.
- 5 M. Maintenance of underground cables, etc.

NOTE.—The cost of maintenance of the motors, etc., in the workshops, the ore reduction works, etc., are charged direct to the subsidiary accounts concerned.

(b) The engineer or electrician supplies a statement showing the number of units (kilowatt hours) used for each motor, and the work on which the motor is engaged. The total debit is divided on this basis, and posted in the distribution (see Chapter XII), in the column headed " electric power," against the respective heads of accounts chargeable.

(c) For a mine producing its own power there would be debits on account of steam power expenses, etc., instead of for current purchased.

73. *Electric Lighting Account.*—This includes the cost of current, plus stores and wages, as in the case of electric power. The sub-division would be as follows :

Job No.

- 10 R. General running, including cost of current.
- 10 M. Maintenance of wires, lamps, etc.

The engineer or electrician supplies the basis of distribution as in the case of " electric power."

74. (a) *Tramway Expenses or Surface Haulage.*—This covers the cost of the following haulage, chiefly :

- Ore from shafts to crusher station, when there is only one crusher station serving two or more shafts ;
- Crushed ore from crusher station to mill ;
- Coal from railway siding to boiler houses, etc. ;
- Stores from ditto to shafts, mill, central stores depôt, etc.

(b) The systems of haulage used vary on different mines, viz., steam locomotives, electric locomotives, endless wire ropes, gravity inclines, etc.

(c) In the case of steam haulage the account would be sub-divided as follows :

Job No.

15 R. General running, including wages of engine-drivers and shunters, fuel, water, running stores, etc.

16 M. Maintenance of locomotives.

17 M. Maintenance of wagons.

18 M. Maintenance of tracks.

19 M. Maintenance of weighbridge.

(d) The distribution would be on the basis of tons or trucks hauled, but some mines ignore the haulage of coal and stores, and debit all the tramway expenses to "Transport of ore account" (working costs).

75. (a) *Supervision*.—This includes the salaries and wages of the following officials and the native orderlies employed directly under them :

(a) Mine captains and shift bosses ;

(b) Ore reduction officer and battery and cyanide foremen ;

(c) Engineer ;

(d) Workshop foremen.

(b) On some mines elaborate calculations are made, the supervision charges being distributed according to the amount of white wages spent on each job. In most cases a rough approximation by the supervising officials themselves is accepted. Thus the mine captain can say what proportion of his and the shift bosses' salaries should go to stoping, developing, sinking, tramming, etc. The ore reduction officer can divide his own and his foremen's charges between stamp and tube milling, and cyaniding sands and slimes. The engineer can give a rough idea of his and his foremen's time.

(c) In some cases the engineer and his foremen's charges are debited to workshop expenses account. This account is, however, intended to cover charges for only the running and maintenance of workshop machines, tools and buildings.

(d) On the other hand, some mines do not treat "supervision" as a subsidiary account, but have an extra column in the white wages allocation book. This, however, throws the work of distribution on to the timekeeper at a time when he is busy with very urgent work, and also increases the size of the allocation book.

76. (a) *Water Supply Account*.—This includes the costs incurred on account of *all* water used on a mine, whether for ore reduction, boilers or domestic purposes. It also includes the cost of water purchased, and may further be debited with a portion of the pumping and baling expenses (working costs) for any portion of water taken into use. Other debits would consist of stores, white and native wages, compound expenses, steam, air, or electric power for pumps, workshop expenses. (The last three items would have to be worked out at the previous month's rate owing to these accounts not being complete at this stage.) The sub-division would be :

Job No.

- 20 R. General running, including cost of water purchased, and power.
- 21 M. Maintenance of piping.
- 22 M. Maintenance of surface pumps.
- 23 M. Maintenance of pump houses.
- 24 M. Maintenance of dams.

(b) The engineer supplies a statement showing the number of gallons used for each job, and the net debit is charged out accordingly per 1,000 gallons.

77. (a) *Stables Expenses Account*.—On some mines this is treated as a working cost account, *i.e.*, as a portion of "general charges," but even if this were correct, it is better that the debit to "general charges" should be in

one lump sum, and thus relieve it of a number of petty details. The sub-division would be :

Job No.

30 R. Grooming and feeding of animals.

30 M. Maintenance of stable buildings.

31 M. Maintenance of trollies, carts, harness, etc.

32 R. Running of motor-car, including petrol, carbide, etc.

32 M. Maintenance of garage.

33 M. Maintenance of motor-car.

Forage and fodder are best passed through the stores books, to reduce the number of entries in the cash book.

(b) The net debit is distributed partly to certain jobs at an estimated rate per hour or day, the balance going to "general charges" account.

78. (a) *Sanitation Account*.—As in the case of stables expenses, this account is treated on some mines as a working cost account, and the same remarks apply in this case, *vide* par. 77 (a). The debits include municipal or contractors' charges, wages, stores (disinfectants), etc. The sub-division would be :

Job No.

40 R. Surface sanitation, general running.

40 M. Surface sanitation, maintenance of buckets, etc.

41 R. Underground sanitation, general running.

41 M. Underground sanitation, maintenance.

(b) Surface sanitation charges are distributed on the basis of the number of buckets removed during the month, and underground charges either direct on the number of employees, or through "hoisting" account, which is charged out on tonnage.

79. (a) *Native Compound Expenses*.—This includes the cost of recruiting, feeding, housing, doctoring, and controlling the natives. The debits include the monthly debit from the native labour supply book, *vide* par. 26, the salaries of the compound manager and the native

timekeeper and their staff, white and native, stores, repairs to buildings, etc. All articles of food supplied are charged through the stores books. The sub-division would be :

Job No.

50 R. General running, including compound manager and his staff, food, etc.

50 M. Maintenance of living rooms.

51 R. Running of kitchen, including cook's wages, coal or steam power, etc.

51 M. Maintenance of kitchen buildings and apparatus.

52 M. Maintenance of other compound buildings.

53 R. Running of hospital, including food, drugs, medicines, staff, etc.

53 M. Maintenance of hospital buildings.

54 M. Maintenance of hospital instruments and furniture.

(b) The total expenditure is charged out on the basis of shifts worked by natives on each job during the month, obtained from the timekeeper's allocation summary, as follows :

	Shifts	Amount.
Total shifts, say .. .. .	15,000	£750 0 0
Less—		
Compound natives .. .. .	600	—
Estimated at 1s. on account of—		
Electric Power .. .. .	90	4 10 0
Electric Lighting .. .. .	30	1 10 0
Water Supply .. .. .	30	1 10 0
Sanitation .. .. .	150	7 10 0
Stables .. .. .	120	6 0 0
Total .. .. .	1,020	£21 0 0
Balance for distribution	13,980	£729 0 0

Equal to £.... per shift.

(c) This rate per shift is worked out on a Brunsviga calculating machine for all shifts from one to seventy-five, thus making a ready reckoner. This is found very useful afterwards for working out the compound expenses for each job of working costs, and capital accounts, etc.

(d) Native compound expenses due from mine contractors are charged out to them at a fixed rate per native shift. This rate may be above or below the actual rate found, and it is considered desirable on some mines to credit or debit the jobs with the difference in cost. In some cases, the rates charged to contractors include native compound expenses. The debits are here made direct to the jobs according to the number of shifts in the mine contractors' allocation summary, par. 36 (c).

80. (a) *Workshop Expenses*.—There are certain charges connected with the running and maintenance of workshops which cannot be debited to any particular job. Running charges would consist of lighting, steam, air, or electric power, etc. Maintenance charges would be repairs to machines, tools, and buildings. The sub-division would be :

Job No.

- 60 R. Running of fitter's shop.
- 61 R. Running of carpenter's shop.
- 62 R. Running of blacksmith's shop.
- 63 R. Running of boilermakers' shop.
- 60 M. Maintenance of machinery and tools, fitter's shop.
- 61 M. Maintenance of machinery and tools, carpenter's shop.
- 62 M. Maintenance of machinery and tools, blacksmith's shop.
- 63 M. Maintenance of machinery and tools, boilermaker's shop.
- 64 M. Maintenance of buildings, fitter's shop.
- 65 M. Maintenance of buildings, carpenter's shop.
- 66 M. Maintenance of buildings, blacksmith's shop.
- 67 M. Maintenance of buildings, boilermaker's shop.

(b) The distribution varies on different mines. In most cases the charges are lumped together and divided out among the jobs on which the workshop machinery was used, for the number of hours noted against each. Thus



work done on a small screwing machine would bear the same rate per hour that work done on a heavy planer, a machine saw, or a steam hammer would bear. The question here resolves itself into whether the results to be obtained by any more elaborate distribution would justify the expenditure. The matters of depreciation, interest on capital, etc., need only be referred to here to say that they are ignored at this stage on most, if not all mines.

(c) The distribution would be done as in the case of compound expenses. (See par. 79 (b) and (c).)

81. *Survey Expenses Account*.—This consists chiefly of the salaries and wages of the surveyors and their natives. The sub-division would be :

Job No.

70 R. General running, including salaries, etc.

70 M. Maintenance of instruments.

71 M. Maintenance of blue-print room.

The expenditure is debited to the various mining accounts for each shaft, *i.e.*, stoping, sinking, and development, on the basis of tons mined, as shown in the surveyor's measurement and tonnage statement for the month.

82. *Sampling Expenses Account*.—This consists chiefly of the salaries and wages of the samplers and their natives. The sub-division would be :

Job No.

75 R. General running, including salaries, lighting and power for sample crushing.

75 M. Maintenance of sample crushing machine.

76 M. Maintenance of building for ditto.

The distribution is on the number of samples taken from stoping and development faces for each shaft, as supplied by the head sampler.

83. *Assay Expenses Account*.—As in the two previous cases, the debits consist chiefly of the salaries and wages of the assayer and his staff, stores, fuel, etc. The sub-division would be :

Job No.

- 80 B. General running, including salaries, wages, fuel, stores, etc.
- 80 M. Maintenance of instruments.
- 81 M. Maintenance of furnaces.
- 82 M. Maintenance of buildings.

The distribution is on the number of assays performed, each "surface" assay being counted as equal to three "mine" assays. The surface assays are for ore, pulp, slimes, etc., taken from the crusher station, the mill, or the cyanide works.

*84. Steam Power Account.*—This includes the wages of firemen, stokers, etc., fuel, water, etc. The sub-division for each shaft would be as follows :

Job No.

- 90 R. General running of boilers, including wages, fuel, water, etc.
- 90 M. Maintenance of boilers.
- 91 M. Maintenance of feed pumps and pipes.
- 92 M. Maintenance of economisers.
- 93 M. Maintenance of smoke stack.
- 94 M. Maintenance of boiler-house.
- 95 M. Maintenance of ash removal trucks and track.

If considered necessary, the removal of ashes and the power for running the economiser motors may have separate "running" job numbers, 95 R. and 92 R.

The engineer supplies the basis of distribution, *i.e.*, of the approximate weight of coal used for the respective hoisting engines, air compressors, workshops, pumps, etc., supplied with steam from the boilers.

*85. Air Power Account.*—This covers the wages of the compressor engine-drivers and their men, cost of steam power used, etc. The sub-division for each shaft would be as follows :

Job No.

- 100 R. General running, *i.e.*, drivers' wages, steam power, stores, etc.
- 100 M. Maintenance of compressor engine.
- 101 M. Maintenance of building for ditto.
- 102 M. Maintenance of air mains.

The expenditure is charged out against stoping, sinking, development, hoisting, etc., for each shaft, according to the machinery supplied with air power. The unit adopted is a rock-drilling machine shift, and air winches, air hoists, etc., are worked out to equivalents on this basis.

86. *Hoisting Expenses Account*.—This includes the wages of engine-drivers, banksmen, skip-tenders, etc., and their natives, cost of steam, air, or electric power used, lighting, etc., as well as the cost of maintenance of engines, buildings, shaft timbering, skips, cages, ropes, headgear, etc. The sub-division would be for each shaft as follows :

Job No.

- 110 R. General running, including banksmen and skip-tenders.
- 111 R. Running of — engine, including drivers, steam power, etc.
- 111 M. Maintenance of ditto.
- 112 R. Running of — air hoist.
- 112 M. Maintenance of ditto.
- 113 M. Maintenance of headgear.
- 114 M. Maintenance of cages and skips.
- 115 M. Maintenance of ropes.
- 116 M. Maintenance of shaft, including rollers, etc.
- 117 M. Maintenance of engine-house.
- 118 R. Running of change house.
- 118 M. Maintenance of ditto.

The total debit is charged out to stoping, sinking, and development for each shaft on the basis of tons hoisted, as shown in the surveyor's footage and tonnage statement.

87. *Drill Sharpening Expenses Account*.—This consists

chiefly of payments to the white drill sharpeners (usually on contract), as well as power used for machines, if any, compressed air for the fires, etc. The sub-division would be :

Job No.

120 R. General running, including wages, fuel, power, etc.

120 M. Maintenance of machinery, forges, etc.

121 M. Maintenance of building.

In most cases, the contractors are paid a certain rate per foot or fathom sunk, developed, or stoped, thus making them interested in turning out well-tempered and sharpened drills. A portion of the debit is therefore automatically distributed on the number of drills supplied to each shaft. The remainder, amounting to about 10 per cent. of the whole, is distributed in the same ratio.

**88. *Maintenance of Rock-Drills Account.***—This covers all repairs to the rock-drilling machines used underground, and includes the wages of the fitter and his natives, cost of power for lathes, etc., air used for testing, etc. The sub-division would be :

Job No.

125 R. General running, including wages, fuel, power, etc.

126 R. Rock-drill spares for — machines.

126 M. Maintenance of shop machinery.

127 M. Maintenance of shop building.

The distribution is usually on the basis of the average number of machine shifts, as supplied by the mine captain.

**89. *Tramming and Shovelling Expenses Account.***—This includes all costs incurred underground in shovelling (termed "lashing") and pushing the trucks to and from the shaft station, etc., as well as repairs to trucks and tracks.

(Note.—Sinking contractors are generally paid a rate which includes loading into skips.)

The sub-division would be for each shaft as follows :

Job No.

- 130 R. General running, including wages of natives, stores, etc.
- 131 M. Maintenance of trucks.
- 132 M. Maintenance of tracks.
- 133 M. Installing and maintaining stope chutes and boxes.

The costs are charged out to stoping and developing for each shaft, on the basis of tons trammed as supplied by the surveyor.

90. *Precipitation Expenses Account*.—This is the process of running the auro-cyanide solution into boxes containing zinc shavings or dust, which absorb the gold ; and the debits include wages, cost of zinc, and cutting the same into shreds on a lathe, power for the lathe, etc. The sub-division would be :

Job No.

- 140 R. Running of zinc lathes, including cost of zinc.
- 140 M. Maintenance of lathes.
- 141 R. General running.
- 141 M. Maintenance of zinc, or extractor boxes.
- 142 M. Maintenance of building.

The distribution is on the basis of tons treated as sands and slimes, as supplied by the ore reduction officer.

91. *Return Water Service Account*.—This covers the costs in connection with the water used in milling and cyaniding. The sub-division would be :

Job No.

- 150 R. General running, including debit from water supply account.
- 150 M. Maintenance of pumps.
- 151 M. Maintenance of pipes, etc.

The expenditure is charged out on the number of gallons used for each class of work as estimated by the ore reduction officer.

92. *Clean-up and Smelting Account*.—The mill and the cyanide works expenses on this account should be kept separate as far as possible. The sub-division would be :

Job No.

160 R. *Mill Clean-up, etc.*—General running, including fuel, acids, etc.

160 M. Ditto, maintenance of furnaces.

161 M. Ditto, maintenance of filter pumps and presses.

162 M. Ditto maintenance of buildings.

(Jobs Nos. 165-167 would be for the cyanide clean-up.)

The distribution of expenses would be on the ounces of gold recovered under each process, as supplied by the ore reduction officer.

## CHAPTER IX

### WORKING COSTS ACCOUNTS

93. (a) CHAPTER I gives a list of these accounts. The difference between the total debit to working costs and the value of the gold produced forms the profit for the month, less, of course, debenture interest. Working costs accounts are treated as consisting of four groups :

*Mining Costs*—Stoping, Pumping and Baling, and Crushing and Sorting.

*Milling and Cyaniding Costs*—Transport of ore, Stamp and Tube milling, and Cyaniding sands and slimes.

*General Charges.*

*Development Redemption.*

(b) The job numbers for the different mining accounts should be prefixed by the initials of the respective shafts, so as to keep separate sub-accounts for each shaft.

(c) The bulk of the debits to working cost accounts comes through the distribution (*vide* Chapter XII).

(d) At the end of the year the balances at debit of working costs accounts are transferred to working expenditure and revenue account (*vide* par. 153), and each year thus commences with a clean sheet.

94. *Stoping Account.*—This covers the cost of excavating the reef, and removing it, with some waste rock, of course, to the surface. The sub-division would be for each shaft, as follows :

Job No.

750 Stoping, excavations by hand drills.

751 Stoping, excavations by machine drills.

752 Stope boxholes, by hand drills.

753 Stope box-holes, by machine drills.

754 Timbering.

755 Sundries.

The debits include stores, explosives, white and native wages, payments to mine contractors, compound expenses, workshop expenses, survey, sampling, assay, hoisting, air power, drill sharpening, rock-drill maintenance, tramping and shovelling, etc.

95. *Pumping and Baling Account*.—This covers the cost of raising the water accumulating underground, by means of steam, air, or electric pumps, or baling skips. The sub-division would be for each shaft, as follows :

760 R. General running.

761 R. Running of — pump.

761 M. Maintenance of ditto.

762 R. Running of baling skips.

762 M. Maintenance of ditto.

The debits would include stores, wages, compound, and workshop expenses ; steam, air, or electric power (for pumps), and hoisting (for baling skips).

96. (a) *Crushing and Sorting Account*.—Metallurgists would like to see these accounts kept separate, but the general practice is to lump them together, apparently because the sorting is done in the same building and is supervised by the same white boss as the crushing.

(b) The account covers the cost of sorting the ore on the surface and crushing it at the crusher station or stations, *i.e.*, all costs from the time the ore arrives on the surface in the rock skips until it is deposited in the trucks under the crusher house bins. On some mines there is a central crusher station for all shafts, and in this case the conveyance of the ore from the shafts to the crusher station is charged to transport of ore.

(c) The sub-division would be for each shaft, as follows :

*Sorting—*

Job No.

200 R. General running, including wages, etc.

200 M. Maintenance of sorting house.

201 M. Maintenance of sorting belts.



202 R. Running of motors or engines driving the sorting belts, including cost of power.

202 M. Maintenance of ditto.

*Crushing—*

Job No.

210 R. General running, including wages, etc.

211 R. Running of motors, including cost of power.

211 M. Maintenance of motors.

212 M. Maintenance of crushers.

213 M. Maintenance of building.

214 M. Maintenance of belts.

215 M. Maintenance of bins.

The debits consist of stores, wages, compound and workshop expenses, and electric power.

97. *Transport of Ore Account.*—This covers the cost of moving the ore from the crusher bins to the mill bins, and the chief debit is on account of tramway expenses or surface haulage (*vide par. 74*).

98. *Stamp Milling Account.*—This covers all costs from the time the ore is received in the mill bins until it leaves as pulp for the tube mills or the cyanide works. The sub-division would be as follows :

Job No.

300 R. General running.

301 R. Debit from return water service account.

301 M. Maintenance of water mains, etc.

302 R. Lighting, including debit from electric lighting account.

302 M. Ditto. Maintenance.

303 R. Stamp motors, running, including debit from electric power account.

303 M. Ditto. Maintenance.

304 R. Pump motors, running, including debit from electric power account.

304 M. Ditto. Maintenance.

305 M. Maintenance of building.

- 306 M. Maintenance of track over mill.
- 307 M. Maintenance of bins.
- 308 M. Maintenance of stamp framing.
- 309 M. Maintenance of stamp stems and tappets.
- 310 R. Supply of stamp heads, shoes, etc., *vide* par. 6.
- 311 M. Maintenance of stamp shafting.
- 312 M. Maintenance of stamp cams.
- 313 M. Maintenance of screens.
- 314 M. Maintenance of tables.
- 315 M. Maintenance of launders.
- 316 R. Debit from clean-up and smelting account.

99. *Tube Milling Account*.—This includes all charges from the time the pulp or fines is received in the tube mill until it leaves for the cyaniding works. The sub-division would be :

Job No.

- 400 R. General running.
- 401 R. Debit from return water service account.
- 401 M. Maintenance of water mains, etc.
- 402 R. Lighting, including debit from electric lighting account.
- 402 M. Ditto. Maintenance.
- 403 R. Motors for tube mills, running, including debit from electric power account.
- 403 M. Ditto. maintenance.
- 404 R. Motors for pumps, running, including debit from electric power account.
- 404 M. Ditto. Maintenance.
- 405 M. Maintenance of tube mills.
- 406 R. Supply of pebbles.
- 407 M. Maintenance of liners.
- 408 M. Maintenance of tables.
- 409 M. Maintenance of launders.
- 410 M. Maintenance of building.
- 411 R. Debit from clean-up and smelting account.

100. *Cyaniding Sands Account*.—This is the process of extracting the gold from the larger particles of pulp ( $\cdot 005$  inch in diameter and over), by means of a cyanide solution, and the account covers all charges from the time the pulp leaves the mill until the gold is extracted from the pulp and the sands deposited on the dump. (*Note*—Slimes consist of that portion of the pulp less than  $\cdot 005$  inch in diameter.) The sub-division would be as follows :

Job No.

500 R. General running, including payment to sands contractor.

501 R. Debit from return water service account.

501 M. Maintenance of water mains.

502 R. Lighting, including debit from electric lighting account.

502 M. Ditto. Maintenance.

503 R. Motors for pumps, running, including debit from electric power account.

503 M. Ditto. Maintenance.

504 M. Maintenance of launders.

505 M. Maintenance of tanks.

506 M. Maintenance of tracks.

507 M. Maintenance of trucks.

508 M. Maintenance of haulage ropes, and gear.

509 M. Maintenance of ladders, platforms, etc.

510 R. Debit from precipitation account.

511 R. Debit from clean-up and smelting account.

101. *Cyaniding Slimes Account*.—This is the process of extracting gold from the smaller particles of pulp (under  $\cdot 005$  inch in diameter), by means of a cyanide solution, and the account includes all charges from the time the pulp leaves the mill until the gold is extracted and the residue is deposited in the slimes dam. The sub-division would be as follows :

Job No.

600 R. General running.

601 R. Debit from return water service account.

- 601 M. Maintenance of pumps, pipes, etc.
- 601 R. Lighting, including debit from electric lighting account.
- 601 M. Ditto. Maintenance.
- 602 R. Motors for pumps, running, including debit from electric power account.
- 602 M. Ditto. Maintenance.
- 603 M. Maintenance of tanks.
- 604 M. Maintenance of launders.
- 605 M. Maintenance of ladders, etc.
- 606 M. Maintenance of slimes dams.
- 607 M. Maintenance of slimes vats.

102. (a) *General Charges*.—This is sub-divided into the following separate accounts :

- (1) General mine expenses.
- (2) Mine office expenses.
- (3) Maintenance of buildings.
- (4) Roads and surface maintenance.
- (5) Town office expenses.
- (6) London and Paris office expenses.

(b) On a developing or non-crushing mine, the first four are treated as subsidiary accounts, and distributed monthly to capital accounts. The last two items are kept outstanding during development of the mine, but when crushing commences the balances outstanding are charged out to the various capital accounts in existence.

(c) *General Mine Expenses Account*.—This includes such charges as consulting engineer's fees, claims licence charges, mine telephones, insurance, mine watch and ward, and part of sanitation and stables expenses. One job number, 700, would suffice for this account.

(d) *Mine Office Expenses Account*.—This covers the salaries of the mine office and store staff, including natives, stationery not chargeable direct, postage, telegrams, Government telephones, etc. The sub-division would be :

Job No.

710 R. Running, including salaries, wages, stationery, and sundries.

711 M. Maintenance of mine office building and furniture.

712 M. Maintenance of store office buildings, and furniture.

(e) *Maintenance of Buildings*.—This includes such quarters as are occupied free of rent, and sub-division would be :

Job No.

720 M. Maintenance of free quarters.

721 M. Maintenance of general buildings.

(f) *Roads and Surface Maintenance*.—This explains itself and one job number, 730 M. would suffice.

(g) *Town Office Charges Account*.—This covers directors' and secretarial fees, etc.

(h) *London and Paris Office Charges Account*.—This covers the London Committee's fees, etc.

103. *Development Redemption Account*.—When a mine starts crushing there is a large amount at debit of development account (see par. 113), the asset corresponding to this being the ore reserves, and this amount has to be gradually extinguished. A block of ground is said to be developed when the reef is surrounded by drives and winzes, and the ore reserves consist of the payable reef contained in all such blocks. An approximate price per ton of ore is thus arrived at, 12 cubic feet being taken as a ton. An amount at this price based on the tonnage milled during the month is *debited* to development redemption account, and *credited* to development account (see par. 113) every month. The development account is thus gradually reduced until it is extinguished, after which all development is generally charged direct to working costs.

## CHAPTER X

### CAPITAL ACCOUNTS

104. CHAPTER I gives a list of these accounts, which are kept in the Main Ledger. The job numbers should have as prefixes the initials of the respective shafts, see par. 4; and the building and machinery jobs should further be split up and distinguished by suffixes as explained in par 5.

105. In the case of buildings, plant and machinery, etc., on some mines, only one account is kept under each head, such as "underground plant," etc., but on others there is a separate account for each shaft.

106. When a mine commences crushing, all capital accounts are closed, and few debits are allowed against capital accounts, except on previously authorised estimates. In most cases, however, there is always some incline sinking and development going on, and, with these exceptions, the other remarks on the following portion of this chapter apply chiefly to developing, *i.e.*, non-crushing mines.

107. The entries of sinking and development accounts in the main ledger, construction book, and cost books, are explained in the remarks on these accounts in par. 112 *et seq.*

108. In the case of buildings, plant and machinery, the entries in the construction book (see par. 21) correspond to the different jobs, *i.e.*, there is a page set apart for each job. A building may consist of eight jobs, as explained in par. 5, and these entries should be kept as nearly as possible in consecutive pages of the construction book. In the construction summary book (see par. 22) the different jobs pertaining to each work would be entered consecutively so that the total cost of the whole work or any part of it, can be ascertained at any time.

109. As stated before, *vide* pars. 21 and 22, Chapter IV, the total of each account in the construction summary book,

such as "underground plant," should be checked and made to agree with the main ledger balance every month.

110. The cost of foundations for machines, such as lathes, steam-hammers, etc., is included in the cost of installing them, and not in that of the building.

111. The balances outstanding on capital accounts at the end of a financial year are shown on the "assets" or credit side of the balance sheet.

112. (a) *Sinking Account*.—This covers the cost of sinking vertical or incline shafts, and includes timbering, fixing steel guides, etc. The sub-division would be for each shaft, as follows :

Job No.

900. Vertical sinking, excavations, hand drilling.

901. Vertical sinking, excavations, machine drilling.

902. Vertical sinking, timbering.

903. Vertical sinking, steel guides.

910. Incline sinking, excavations, hand drilling.

911. Incline sinking, excavations, machine drilling.

912. Incline sinking, timbering.

913. Incline sinking, laying rails.

920. Sundries.

(b) In the main ledger there would be one account for the sinking of each shaft, with separate columns for vertical and incline sinking. On some mines, however, all sinking is kept in one account.

(c) In the construction book, details would be kept of each job shown above, as well as the total sinking for each shaft.

(d) The cost books follow the construction book in the details required.

113. (a) *Development*.—This includes the cost of:—Crosscuts, *i.e.*, horizontal tunnels from the shaft to the reef or through dyke; Drives, *i.e.*, horizontal tunnels from crosscuts or shafts following the line of reef; Winzes and raises, *i.e.*, small incline shafts along the reef connecting

one level or drive with another—winzes are sunk downwards and raises are excavated upwards ; Ore chutes, *i.e.*, winze-like excavations running independently of the line of reef, generally at a convenient angle for shooting ore from one level to another, or to a shaft.

(b) The sub-division would be as follows for each shaft :

Job No.

- 800. Driving, hand drilling.
- 801. Driving, machine drilling.
- 802. Winzing, hand drilling.
- 803. Winzing, machine drilling.
- 804. Raising, hand drilling.
- 805. Raising, machine drilling.
- 806. Cross-cutting, hand drilling.
- 807. Cross-cutting, machine drilling.
- 808. Sundries.

(c) On some mines development is divided only into hand work and machine work.

(d) In the main ledger (as in the case of sinking) there would be either one account for all development work or one for each shaft.

(e) In the construction book there would be a separate account for each job for each shaft, as well as for the total development costs of each shaft.

(f) The cost book would follow the construction book. See also par. 103.

114. *Underground Plant account.*—This covers the cost of supplying and installing the following at each shaft (see par. 4, Chapter II) :

Job No.

- 1001. Underground air mains.
- 1002. Underground tramway tracks.
- 1003. Underground tramway trucks.
- 1004. Underground hoists (air, steam, or electric).
- 1005. Underground pumps (air, steam, or electric).
- 1006. Underground bells or signals.
- 1007. Underground rollers, etc., etc.



115. *Surface Plant Account*.—This is the cost of supplying and installing all plant on the surface immediately connected with underground work, such as :

Job No.

- 1050. Headgear.
- 1051. Wire ropes.
- 1052. Skips.
- 1053. Cages.
- 1054. Buckets.
- 1055. Baling skips.
- 1056. Hoisting engines.
- 1057. Compressor engines.
- 1058. Boilers.
- 1059. Crusher machinery, etc. etc.

(Note : See par. 4, Chapter II.)

116. *Shaft Building Account*.—Cost of buildings on the surface immediately connected with the shaft work, such as :

Job No.

- 1100. Engine house.
- 1101. Boiler house.
- 1102. Change house.
- 1103. Crusher house, etc., etc.

(Note : See par. 4, Chapter II.)

117. *Surface Buildings*.—Cost of surface buildings not mentioned above :

Job No.

- 1150. Mine office.
- 1151. Blue print room.
- 1152. Store.
- 1153. Storeyard.
- 1154. Oil store.
- 1155. Dynamite magazine.
- 1156. Stables.
- 1157. Motor-car garage.

118. The following accounts are clearly explained by their names :

**Job No.**

Workshop buildings, Job Nos. 1200-1249.

Residential buildings, Job Nos. 1250-1299.

Mill buildings and plant, Job Nos. 1300-1399.

Cyanide buildings and plant, Job Nos. 1400-1499.

Compound buildings and plant, Job Nos. 1500-1549.

119. *Workshop, Plant and Machinery Account.*—This covers the cost of supplying and installing all machinery such as lathes, steam-hammers, etc., as well as belting, motors, shafting, etc. (Job Nos. 1600-1699.)

120. *Water Service Account.*—This covers the cost of supplying and installing all surface pumps, mains and pipes, etc., not provided for any particular works or buildings. (Job Nos. 1550-1599.) For instance, the mill water service would be included in the mill buildings and plant account ; pipes, etc., within the precincts of residential quarters would be charged to those quarters. The pump-house buildings, if any, would be included with " surface buildings."

121.—*Electric Power and Lighting Plant Account.*—This covers the cost of all outside wires, cables, poles, transformers, switches, etc., which are not debitable to any particular job, such as residential quarters, mill or workshop buildings. (Job Nos. 1700-1749.) The buildings, if any, would be included with " surface buildings."

122. *Railway Sidings Account.*—This covers the cost of all coal and ore trucks not debitable to any particular account. The track over the mill would be included in the mill buildings and plant account. (Job Nos. 1750-1799.)

123. *Surface Tramways Account.*—This includes the cost of all locomotives and rolling stock required for general work. Small side tipping trucks and track for dumping sands would be included with cyaniding plant account. (Job Nos. 1800-1849.)

124. *Live Stock and Vehicles Account*.—This covers the cost of the horses, mules, etc., required for mine work, as well as carts, traps, harness, chaff-cutters, motor-cars, etc. (Job Nos. 1850–1899.) The stables and motor-car garage would be included with surface buildings.

125. *Office Furniture Account and Surveyors' and Engineers' Instruments Account*.—These explain themselves.

## CHAPTER XI

### GENERAL ACCOUNTS

126. CHAPTER I gives a list of the principal accounts, which are made up chiefly of journal and cash book entries, and are kept in the main ledger. The following are the accounts :

127. *Stores Account*.—This is a summary of all stores transactions during the year. The *debits* are the monthly totals of the stores journal (or the trade accounts summary book), *vide* Chapter VII, *i.e.*, the total value of *stores received* into stock month by month. The *credits* are the monthly totals of column 5 of the distribution book, *vide* Chapter IV, par. 19, *i.e.*, the total value of the *stores issued* month by month. The balance at the end of the year is the book value of the stores on hand, which should agree as nearly as possible with the results of the annual stock-taking. This balance is shown as an asset in the annual balance sheet.

128. (a) *White Wages Account*.—This is *debited* through the cash book with the net amount paid each month, and through the journal with the deductions on account of board, rent, etc.

(b) The account is *credited* through the distribution book with the gross amount of white wages debited to the different working cost, capital, subsidiary and sundry accounts.

(c) The debits should agree with the credits under ordinary circumstances, *i.e.*, there should be no balance outstanding.

(d) Though it is not the usual practice, it will be found more convenient and economical of space if this account is kept in the columnar portion of the ledger, with separate columns for cash, board, rent, etc.

129. *Mine Contractors' Account*.—Same as white wages, par. 128.

130. (a) *Native Wages Account*.—Same as par. 128 (a), (b), and (d), only that the journal debits are for clothing, advances, etc.

(b) There is always a difference between the debits and credits, consisting of the "suspense wages" explained in par. 41. This amount is shown at the end of the year on the debit side of the balance sheet as part of the amount due to "sundry creditors."

130. *Native Labour Supply Account*.—This is debited with the amounts paid to recruiters or recruiting agencies. For the purpose of crediting this account every month with the proper proportion of charges due for that month, a subsidiary tabular journal is kept in the form explained in par. 26.

The balance at the end of the year is shown on the credit side of the balance sheet as part of "payments in advance."

131. *Native Clothing and Advances Accounts*.—Natives are sometimes supplied by recruiters with clothing and cash advances. The amounts due are debited to the respective accounts named above. The amounts due from the boys are deducted from their wages in the native pay-roll, and for the total amount thus recovered a journal entry is passed every month as follows :

Debit, native wages account ..	..	£.....
Credit, native clothing account ..	..	£.....
Credit, native advances account ..	..	£.....

The balance outstanding at the end of the year is shown on the credit side of the balance sheet as part of the amount due to the company from "sundry debtors."

132. *Purchasing Agency Account*.—Each group of mines has a Town Buyer, who arranges with suppliers for the stores required by the different mines, and these suppliers' accounts are made out subject to a discount, *vide* Chapter VII (stores).

This discount is credited to the "Purchasing Agency Account," while the company's share of the town office charges in connection with the Town Buyer and his staff is

*debited* to the same account. The balance at the end of the year is credited to "sundry revenue," *vide* par. 149.

133. *Interest Paid and Received Accounts*.—These are kept separately, and include all amounts paid by the company as interest on loans, or *vice versa*. The balances are transferred at the end of year to the working expenditure and revenue account (*vide* par. 153), as part of the item "interest, commission and exchange."

134. *Investments Account*.—This is a schedule of the general investments of the company. The book value (either at original cost or less amounts written off for fall in prices of investments) is shown on the asset or credit side of the balance sheet at the end of the year. Special investments are sometimes made on account of reserve funds for renewals of plant, etc., and these are kept in separate accounts in the ledger.

135 (a) *Rent Account*.—This is called for convenience a "sundry account" in the distribution book, allocation, summaries, etc., but it is kept in the main ledger, and not in the sundry persons' ledger, like other sundry accounts.

(b) The *debts* consist of the expenditure for repairs, etc., coming through the distribution book, and the *credits* are the amounts deducted in the white pay roll and the mine contractors' pay roll every month, for rooms and cottages tenanted by the company's employees.

(c) The balance at the end of the year is transferred to sundry revenue account in the working expenditure and revenue statement (*q.v.*), par. 153.

136. *Manager's Cash Account*.—This is *credited* once or twice every month by the town office through the local bank with the amount estimated to be required for white and native wages, mine contractor's earnings, and other incidental expenditure. The *debts* consist of the totals at foot of the cash book account for the months concerned. The balance in the ledger should agree with the bankers' monthly certificate of balance in the bank, less the amounts of unpaid cheques, *vide* par. 18 (b), Chap. IV.

137. *The—Insurance Company's (Accidents) Account.*—

At the beginning of the year the insurance company is paid by cheque the estimated amount of premiums due for the whole year. This amount is *debited* to the insurance company's account. At the end of every month the amount due is calculated and *credited* to the same account (and debited to general mines expenses—see note below). The difference at the end of the year is debited or credited to adjust the estimated amount with that actually due.

*Note.*—On some mines, amounts paid as accident insurance premiums on natives are debited to native compound expenses, thus ensuring each job being debited with the entire expenditure on account of native labour.

138. *The—Insurance Company's (Fire) Account.*—As explained in the previous paragraph, the estimated premium for the year is paid in advance. For new buildings erected during the year, additions are made as required. Every month the proportion due is debited to general mine expense account and credited to the insurance company's account.

139. *The—Insurance Company's (Fidelity) Account.*—This is treated in the same manner.

140. *"Subsidiary Accounts" Account.*—This is fully explained in Chapters VIII and XII, as well as Chap. I, par. 1 (a), and Chap. IV, par. 16.—The debits and credits are received through the journal, cash book, distribution books, etc., and should balance every month.

141. *Sundry Person's Account.*—This is explained in connection with the sundry persons' ledger, Chap. IV, par. 15, and in Chap. I, par. 1 (e).

142. (a) *Key Deposit Account.*—Tenants of rooms and cottages owned or hired by the company are required to pay a small deposit on receipt of the front door key. This is paid in cash or deducted from the tenant's earnings and *credited* to "Key Deposit Account."

(b) When the room or cottage is vacated and the key returned to the caretaker or timekeeper the deposit is

refunded in cash, and the amount *debited* to "Key Deposit Account."

(c) There is always a surplus to the credit of this account for keys out at the time, etc., and this balance is entered as a liability on the debit side of the balance sheet, as part of the "sundry creditors' account."

143. *The — Insurance Company's (Gold) Account.*—At the beginning of the year, the amount of premium due on the estimated output of gold for the year is paid to the insurance company, and debited to this account. When a bar of gold is despatched, the actual amount of insurance due on the estimated value of the bar is *credited* to the same account. The difference at the end of the year is adjusted to balance the estimated and actual amounts of premiums.

144. (a) *Gold Account*, and *Gold in Transit Account.*—The form of gold register given in par. 25 will help to explain how these accounts are operated on.

(b) When the output is ready in the shape of bars, which are consecutively numbered and marked M or C for mill or cyanide bars respectively, the gold is taken to the bankers who despatch it to London for sale there. A receipt is obtained from the bankers, showing the weight of the bars on the bank or mine scales. Taking these weights and the fineness of gold as found from the mine assays, the estimated value is :

*debited* to gold in transit account, and  
*credited* to gold account.

(c) The insurance (*vide* par. 143) is  
*debited* to gold in transit account, and  
*credited* to the — insurance company's account.

(d) When the bars are sold in London, the net amount realised is credited through the Town office cash to gold in transit account, and for the difference between the estimated value and the net proceeds, one of the two following alternative hypothetical journal entries is passed :



- (i) When there is a *surplus*, *i.e.*, when the estimated value is less than the net proceeds :

Gold in transit account, Dr. .. ..	£	280
Gold account, Cr. .. ..	280	
Surplus on November output—		
Gross proceeds .. ..	£8,000	
Less Expenses .. ..	220	
Insurance (journal folio —) ..	£20	
Bank charges .. ..	200	
<hr/>		
Net proceeds (Town cash folio —) ..	7,780	
Estimated value (journal folio —) ..	7,500	
<hr/>		
Surplus .. ..	£280	

- (ii) When there is a *deficit*, *i.e.*, when the net proceeds are less than the estimated value :

Gold account, Dr. .. ..	£	20
Gold in transit account, Cr. .. ..	20	
Deficit on November output—		
Gross proceeds .. ..	£8,000	
Less Expenses .. ..	220	
Insurance (journal folio —) ..	£20	
Bank charges .. ..	200	
<hr/>		
Net proceeds (Town cash folio —) ..	7,780	
Estimated value (journal folio —) ..	7,800	
<hr/>		
Deficit .. ..	£20	

(e) The balance of the gold account at the end of the year is shown on the revenue or credit side of the working expenditure and revenue statement (*vide* par, 153). The balance of the gold in transit account is shown as an asset on the credit side of the balance sheet.

145. *Licences Account*.—This treats of the amounts paid to Government according to its financial year. The payment is *debited* to this account through the town office cash. Each month the proportion due for that month is *credited* to this account, and *debited* to general mine expenses. The balance at the end of the year is entered as an asset

on the credit side of the balance sheet, as part of the item "payments in advance."

146. *Taxes due to Municipalities, and*

*Rents due to other companies, etc., and other similar accounts are treated in the same manner.*

147. *Suspense Accounts.*—Of the various suspense accounts kept up, the most common is that for providing new ropes, boiler tubes, tube mill liners, stamp mill liners, belting, etc. If the cost of a new rope were debited direct to hoisting account, it would cause a large difference in the cost of hoisting, and this is avoided by debiting a small sum each month to hoisting account and crediting suspense account. If the account is kept in the columnar portion of the main ledger, each part of it, such as ropes, boiler tubes, etc., would have its own column, and heavy surpluses or deficits would be easily detected and prevented.

148. *Reserve Funds.*—Payments from these have to be carefully analysed and allocated, as, on account of the profits tax regulations, no expenditure on new capital works may be debited to working costs (payments for actual renewals and replacements of existing machinery, plant and buildings may be debited to working costs and therefore appear in the working expenditure and revenue statement, *vide* par. 153, *seq.*).

149. "*Sundry Revenue*" *Account.*—This is a receptacle at the end of the year for all miscellaneous amounts such as the balance of the rent account (par. 135), purchasing agency account (par. 132), etc.

150. *Property Account, Shares Account, Debenture Account, Debenture Interest Account, Dividend Account, etc.*—These are treated in the same manner as in ordinary trading companies' accounts.

151. *Profits Tax Account.*—The amount estimated as due to Government is credited to this account before *ad interim* dividends are declared. At the end of the Government financial year the balance due is credited, and the total is available for payment to the Government.

152. *Appropriation Account*.—This is an annexure to the balance sheet and is a receptacle for the profits and for the amounts set aside for payment to shareholders, debenture holders, etc. (See example at end of book.)

153. *Working Expenditure and Revenue Statement*.—This is a summary of the working costs and the gold account, and is annexed to the balance sheet. (See example at end of book.) The *debits* consist of the balances for the year against :—Mining expenses, *i.e.*, stoping and pumping and baling ; development redemption ; sorting and crushing ; stamp milling ; tube milling ; cyaniding sands ; cyaniding slimes ; general charges ; expenditure on renewals and replacements of machinery, plant, etc.

The *credits* are made up of the gold account, etc.

The balance, "profit on working," is carried down as a credit, and the further *debits* are for depreciation of stores, income tax, profits tax, etc., while the *credits* would be for estate rents, claims licences (where the company is in possession of owners' rights), interest, commission and exchange ; discounts ; sales of water ; transfer fees ; sundry revenue, etc. The balance is transferred to appropriation account (*vide* par. 152).

## CHAPTER XII

### DISTRIBUTION

154. A LIST of the subsidiary accounts is given in Chapter I, and Chapter VIII shows how each account is made up and on what basis it is charged out.

155. The "distribution" may be described as the process of bringing together in the distribution book (par. 19, Chapter IV) all the amounts debitable to the various subsidiary accounts, and then charging out the net debit in each case, to the various working cost, capital and sundry accounts concerned, so that the debits to these latter accounts in the ledger will be direct, and will consist of only one item in each case, thus relieving the journal of such details as stores, wages, etc.

156. To ensure punctual and expeditious work, it is desirable to decide, *firstly*, the maximum amount of details ultimately required for all purposes, and, *secondly*, the order in which such details should be worked out, so as to meet each requirement as the necessity arises. If, on the other hand, it is attempted to work out every detail in the first instance, it will mean crowding a week's work into a couple of days, and thus increasing the liability of error.

157. Certain information is required for :

Manager's cost books (see par. 23, Chapter IV).

Returns for Government.

Returns for the company's consulting mining engineer, mechanical engineer and metallurgist.

Ledger accounts.

Construction books (see par. 21, Chapter IV).

158 (a). First of all, the manager and the town office wish to know the total working costs for the month, and the manager, mine captains, etc., desire full particulars of the stoping, developing and sinking costs for the month as quickly as possible. The manager, town office, and the

ore reduction officer are also desirous of learning the cost of milling, cyaniding, etc., as early as possible.

(b) It will be seen, therefore, that in the first instance, detailed costs are required separately for each job for stoping, sinking and development (see pars. 94, 112, and 113 for particulars of these jobs), and that other working cost figures are required only for each account, and not for each job.

(c) Of those remaining, namely, other capital accounts, *i.e.*, new construction works, and sundry accounts, the totals will suffice at present, while subsidiary accounts are required at this time separately only for each account and not for each job.

159. The next urgent requirement is the separate maintenance and running costs of ore reduction for the metallurgical department.

160. Then, the costs against each job of capital accounts are required for the construction book and ledger, and the costs against sundry accounts for the sundry persons ledger.

161. Lastly, come the costs against each job of the remaining working costs accounts (*i.e.*, excluding stoping, which has been done for each job, *vide* par. 158 (b), and against each job of the subsidiary accounts—that is, if any or all of these details are required for the cost books or cost cards.

162 (a) For the rough work of the distribution, four loose sheets are used, ruled like the distribution book, *viz.* :

Column (1) Account debited.

- (2) Job number ;
- (3) Number of native shifts ;
- (4) Number of workshop units ;
- (5) Stores (amount) :
- (6) White wages ;
- (7) Mine contractors' earnings ;
- (8) Native Wages ;
- (9) Electric power (amount) ;

- (10) Electric lighting ;
- (11) Water supply ;
- (12) Stables ;
- (13) Sanitation ;
- (14) Supervision ;
- (15) Surface trams ;
- (16) Compound expenses ;
- (17) Workshop expenses ;
- (18) Survey ;
- (19) Sampling ;
- (20) Assay ;
- (21) Steam power ;
- (22) Air power ;
- (23) Hoisting ;
- (24) Drill sharpening ;
- (25) Rock drill maintenance ;
- (26) Trammig and shovelling ;
- (27) Precipitation ;
- (28) Clean-up and smelting ;
- (29) Return and make-up water service ;
- (30) Blank ;
- (31) Total debits for posting in ledgers ;
- (32) and (33) main and subsidiary ledger folios ;
- (34) and (35) Debits and credits through journal, cash book, etc. ;
- (36) Net debits for distribution.

(b) Page 1 would contain in column 1:—Stoping for each job for each shaft, separately; pumping and baling for each shaft; crushing and sorting for each shaft; transport of ore; stamp milling; tube milling, cyaniding sands, cyaniding slimes; general charges under its six sub-heads, *vide* par. 1 (b), Chapter I; and development redemption.

(c) Page 2:—

(1) Sinking and developing separately for each job for each shaft; (2) total of same; (3) each new construction account to which debits are likely. (*Note*: These items need

not be calculated separately at first, the figures in the next item sufficing at present); (4) totals, new construction accounts; (5) grand totals, capital accounts.

(d) Page 3:

All the subsidiary accounts named in par. 1 (a), Chapter I, and a summary of all totals, viz.:

- (i) Totals of page 3—Subsidiary accounts.
- (ii) Totals of page 1—Working cost accounts.
- (iii) Totals of page 2—Capital accounts.
- (iv) Totals of page 4—Sundry accounts. (See clause e.)
- (v) Grand totals, *i.e.*, total credits for posting in main and subsidiary accounts ledgers.
- (vi) Ledger folios (for credits).

(e) Page 4:

All sundry accounts. This page would be left alone while the main distribution is being done. The totals of the debits against these accounts would, however, be worked out and posted in the summary at foot of page 3, and only these need be filled in at the present stage.

163. Before commencing the distribution, all debits and credits against subsidiary accounts are posted from the subsidiary accounts ledger into columns 34 and 35 on page 3, and the totals of these columns balanced with the amounts posted against "subsidiary accounts" in the main ledger.

164. The following documents are required:

Stores allocation summary, par. 61.

White and native wages ditto, par. 32 (n).

Mine contractors' ditto, par. 36 (c).

Engineer's allocation of electric power and lighting units, water consumed, supervision, sanitation, coal consumed by boilers.

Mine captains' allocation of supervision and number of drilling machines at work.

Ore reduction officer's allocation of supervision, tons of sands and slimes precipitated, gold produced, and water used.

Surveyor's allocation of footage, fathomage and tonnage.

Sampler's allocation of samples taken, and assayer's allocation of assays performed.

165. Blank distribution memo. forms printed or ruled as follows are used, one for each subsidiary account :

.....A/c. ...., 1910.

Debits.	Amount.	Credits.			
		Job No.	Account Debited.	Units of Dis-tribution	Amount.
(1)	(2)	(3)	(4)	(5)	(6)
Stores .. ..					
White wages ..					
Native wages ..					
Compound expenses ..					
Workshop expenses ..					
.....					
.....					
Total .. ..					
Journal—Dr. ..					
Cash Book—Dr. ..					
Totals Drs. ..		Total	.. ..		
Less Crs. ..					
Net amount for distribution ..		£	÷	units =	
			£.....	per unit.	

166. The debits on account of stores, white wages, mine contractors' earnings and native wages, as well as the native shifts and workshops units from columns 10 and 12 of the White Timekeeper's allocation summary, are posted into pages 1 to 3 of the distribution sheets from the respective allocation summaries, against the different accounts to be debited. On page 2 the new construction accounts may be left blank for the present, as explained in par. 158 (c),



the entry against the " totals, new construction accounts " being sufficient for the present.

167 (a) After the stores, wages, etc., are posted, we come to the distribution of the subsidiary accounts shown on page 3 of the distribution sheets. Electric power account is first taken in hand. On page 3, there will be entries of stores and wages against this account. There will also probably be further debits for compound and workshop expenses, from the entries in columns 10 and 12 of the time-keeper's allocation summary. As the compound and workshop expenses have not been completed up to now, the rate per native shift for compound expenses and the rate per workshop unit have to be calculated on the previous month's results, and posted against electric power account in columns 16 and 17, page 3. The debits are extended into column 31 and thence into column 36. The entry in column 36 is the net expenditure on electric power for the month which has to be distributed.

(b) These particulars entered in columns 5, 6, 8, 16 and 17, etc., are copied into the memo. form mentioned in par. 165, *ante*, and the totals checked.

(c) The engineer's allocation shows the number of electrical units or Kilowatt hours on account of each job. This is copied into columns 3, 4 and 5 of the memo. form. The rate per unit, or 100 units, or 1,000 units, is worked out, and the debits against each job calculated either on a Brunsviga machine, or by a ready reckoner, and posted into column 6 of the memo. form.

(d) These debits are now copied into the rough distribution sheets, *i.e.*, they are posted into column 9 against the jobs mentioned in the memo. form.

(e) The grand total at foot of column 9, page 3, should agree with the amount in column 36, page 3, against electric power.

168. When all the accounts are distributed as explained in the case of each item, in Chapter VIII, the distribution sheets are cast and cross cast, and the figures are now ready.

The working costs for the town office and the manager, the figures for the consulting (mining) engineer's monthly report, and details of stoping, sinking and developing are ready for the cost books.

169. The capital accounts (new construction) and the sundry accounts, pages 2 and 4 of the distribution sheets are next completed for posting into the ledgers, etc.

170. The work so far may be called the main distribution.

171. For the remainder of the work, narrower distribution sheets may be used, having only three or four blank columns in place of columns 9 to 30 of the main distribution sheets, *i.e.*, there need not be a column with headings for all the subsidiary accounts, as there are never more than three or four such entries for any job.

172. The distribution of costs against each separate job of the new construction works may now be taken in hand, the same abbreviated form of distribution sheets being used. The job numbers against which there are entries in the storekeeper's and timekeeper's allocation summaries are posted into column 2. The totals of each capital account in columns 5 to 36 of the main distribution are entered under each group of jobs, so that the details may be made to agree with them.

	SUBSIDIARY ACCOUNTS LEDGER.	
	Debits.*	Credits.†
Electric Power .. ..		
Etc .. ..		
Total for posting in main ledger		
Journal debits and credits ..		
Cash Book debits and credits ..		
Grand Total .. ..		

\* From column 31, page 3.

† Item (v), page 3.

173. Finally, the working cost and subsidiary accounts are prepared in the same manner, separately for each job.

174. After the main distribution is ready, a summary is made of the debits and credits against "subsidiary accounts," so that there will be only one debit and one credit for entry in the main ledger, as shown on page 84.

173. Finally, the working cost and subsidiary accounts are prepared in the same manner, separately for each job.

Level of Difficulty	Control (%)	Mild (%)	Severe (%)
1	65	55	45
2	75	65	55
3	85	75	65
4	90	80	70
5	95	85	75

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